PLANNING AND IMPLEMENTING A STRUCTURED AND SYSTEMATIC RESPONSE TO ACADEMIC INTERVENTION PLANS THROUGH MULTI-TIERED SYSTEMS OF SUPPORT (MTSS)

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Christopher Stephen Shute, EdD.

Academic intervention programs are designed to proactively identify and address difficulties through a process of progressively intense interventions. The goal of these intervention programs is to "improve student achievement using research based interventions matched to the instructional need and level of students" (Pennsylvania Department of Education, 2008).

Districts that have not implemented a systematic intervention framework risk not providing students with consistent interventions to address areas of need. To effectively meet the needs of the elementary students, a structured and systematic intervention program needs to be instituted. The current Multi-Tiered System of Support (MTSS) framework outlined by the Pennsylvania Department of Education meets these needs through six core characteristics: standards aligned instruction, universal screening, shared ownership, data-based decision making, tiered intervention and service delivery, and family engagement (Pennsylvania Department of Education, 2010). Through this theoretical framework, student success using scientifically-based interventions aligned to the level and need of students can be implemented in the inquiry site.

The purpose of this inquiry is to explore a change within the current intervention system to design and implement an effective MTSS program. Currently there is not a structured

program to address academic concerns. The result is that many students struggle to maintain consistent growth due to a lack of comprehensive strategies and progress monitoring. The resulting problem of practice is that student needs are not being met through the current level of intervention. The development of a MTSS would address the need of providing immediate and consistent interventions to facilitate student growth.

Through this inquiry, the aspects of an effective MTSS program can be applied as evidenced through a teacher survey situated around PDE's six outlined components—standards aligned instruction, universal screening, shared ownership, data-based decision making, tiered intervention and service delivery, and parent engagement.

The inquiry questions surrounding this problem of practice include:

1. What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?
2. What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?

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PREFACE

There are so many people to thank for their help. First and foremost, to my supportive family. To my wife, Kelly, thank you for encouraging and supporting this journey. I love you and appreciate all the sacrifices that you have made for me. You have always been my motivation and reason for being. I am a better person because of you. To my intelligent and beautiful daughters—Kaitlin, Chloe, and Kiersten. I hope that I can make you proud and encourage you to reach your goals. You are my inspiration. I love you and hope you grow up to be as confidant and strong as your mother.

To my parents, thank you for instilling a love of learning and supporting me throughout my educational journey. The sacrifices you made to provide opportunities will never be forgotten. I hope to give back a fraction of what you have given me.

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1.0 INTRODUCTION

Early intervention strategies in Pennsylvania include "comprehensive, multi-tiered, standards with strategies aligned to enable early identification and intervention for students at academic or behavioral risk" (PaTTAN, 2008). Such intervention programs have taken the name of Response to Intervention (RtI), Response to Intervention and Instruction (RtII), and Multi-Tiered Systems of Support (MTSS) in the Commonwealth of Pennsylvania since its inception through the No Child Left Behind (2001) and the Individuals with Disabilities Education Act (2004).

These programs allow "educators to identify and address academic and behavioral difficulties prior to student failure. Monitoring student response to a series of increasingly intense interventions assists in preventing failure and provides data that may guide eligibility decisions for children with learning disabilities" (Pennsylvania Department of Education, 2008). The goal is to improve student achievement using research-based interventions matched to the level and instructional need of the student (Robins & Atrim, 2013).

This problem of practice and literature review examines the historical background of MTSS as well as the core characteristics of the Pennsylvania Department of Education's MTSS theoretical framework of standards aligned instruction, universal screening, shared ownership, data-based decision making, tiered intervention and service delivery systems, and parental/family engagement (Pennsylvania Department of Education, 2010). The resultant literature review will

help to identify the sustainable aspects of an effective intervention plans in order to apply them to a newly developed MTSS in the inquiry site.

2.0 LITERATURE REVIEW

The review of literature and research for this study includes the history of MTSS, definition of MTSS, description of core characteristics, and application to the inquiry site. Also included are the historical perspective and rationale of MTSS as well as key components requires in the MTSS model, including best practices in carrying out the implementation practices through the framework established by PDE.

2.1 HISTORY OF MTSS

Federal law has directed schools to focus on helping all children achieve success by addressing areas of need in a proactive manner through scientifically based research methods. These laws include the No Child Left Behind Act of 2001 (No Child Left Behind [NCLB], 2002) and the Individuals with Disabilities Education Improvement Act of 2004 (Individuals with Disabilities Education Act [IDEA], 1990). Both laws underscore the importance of providing high quality, research based instruction and interventions. They also hold schools accountable for meeting state grade level standards for all students (Klotz & Canter, 2007).

NCLB was designed to close the achievement gap with accountability and flexibility to ensure that no child or school fails to make adequate yearly progress. The four pillars of NCLB include: more freedom for states and communities, stronger accountability for results, proven

education methods, and choices for parents (Editorial Projects in Education Research Center, 2011). Three of these pillars directly support MTSS activities:

- Stronger Accountability for Results: In order to ensure student academic proficiency, states are required to work on closing the achievement gap.
- Proven Education Methods: Using research to determine which educational programs and practices have been proven effective and utilizing them in the school setting.
- More Choices for Parents: Parents are to be afforded meaningful chances to participate in their child's education. Students in schools that fail to meet adequate yearly progress standards for at least three years are eligible to receive tutoring, after-school services, or other types of supplemental services. (Pennsylvania Department of Education, 2008)

The Individuals with Disabilities Education Act (IDEA, 1990) ensures that students with disabilities receive a free and appropriate public education (FAPE) in the least restrictive environment (LRE). IDEA also gives parents a voice in their children's education and protection through procedural safeguards which outline rights throughout the process of referral, eligibility determination, IEP implementation and progress monitoring.

IDEA outlines the steps for determining special education eligibility which factors into MTSS as the "criteria adopted by the State must not require the use of a severe discrepancy between intellectual ability and achievement for determining whether a child has a specific learning disability… and must permit the use of a process based on the child's response to scientific, research-based intervention" (IDEA, Sec. 300.307(A)(1) and (2)).

Furthermore, IDEA "encourages schools to begin using a process that determines if a student responds to a scientific, research-based intervention as a part of the evaluation procedures to determine which students may have specific learning disabilities (SLD) and need

specially designed instruction." (IDEA, Sec. 300.307(A)(1) and (2)). Laura Kaloi (2009), public policy director for the National Center for Learning Disabilities, found that MTSS is the most commonly used method among the many multi-tiered intervention systems/methods being used by schools, districts and states. Pennsylvania is the only state to require approval from its governing body—the Pennsylvania Department of Education—to use MTSS as a basis for determining special education eligibility. To date, only 10 districts in the Commonwealth have schools approved to use MTSS as eligibility for specific learning disabilities (Pennsylvania Department of Education, "RtII for SLD Determination: List of Approved Schools", 2012).

2.2 DEFINITION OF MTSS

MTSS is the federal framework for an early intervening strategy whose objective is to increase student success by using research-based interventions that are aligned to students' need (Rankin, 2008). This imbedded programming allows educators to identify and address academic and behavioral difficulties prior to student failure. Monitoring student response to a series of increasingly intense interventions assists in guiding instruction to prevent academic failure. These "tiers" increase in intensity as movement occurs to more intensive interventions (Gersten et al., 2009).

In the standards-aligned system, all students are provided with data-driven instruction with the additional support needed to achieve academic growth. Data pushes the system to locate the cause of the problem and the way to find a suitable solution using evidence-based interventions (Ehren, Laster, & Watts-Taffe, 2009). The provision of high quality standards-aligned instruction in the general education core curriculum is at the heart of MTSS.

Additionally, MTSS can be used as an alternative to the traditional discrepancy method of special education eligibility. For this literature review, the diagnostic specific learning disability approach will not be directly examined. Rather, the development of research-based methods used as part of this evaluation process will be examined through the lens of initially creating a MTSS in the inquiry site.

As part of MTSS and its general education led effort, it is important to note what the program is *not* designed to be. At its core, MTSS is a system to provide instructional interventions and not simply a pre-referral system for special education or an additional period of reading or math instruction. It is not effectively implemented through an individual teacher nor as a stand-alone initiative. Effective MTSS programs encompass the entire building and are embraced and implemented by all staff members (National Association of State Directors of Special Education, 2006).

2.3 CORE CHARACTERISTICS

The Commonwealth of Pennsylvania's response to the federal framework for scientifically-based response to intervention is situated around six major components: standards aligned Instruction, universal screening, shared ownership, data-based decision making, tiered intervention and service delivery system, and parental engagement. These components will be examined as part of a theoretical framework to build an initial MTSS in the North Allegheny School District.

MTSS is consistent with the school improvement model and Pennsylvania's Standards Aligned Systems (SAS). It is not a stand-alone strategy; rather MTSS is a concept within an all-inclusive improvement effort" (Wixson, 2011). It functions through the coordination of existing

school improvement efforts which may include Special Education, English as a Second Language, Title I, or School Improvement frameworks. MTSS is predicated on the immediacy of applying interventions with student need. This immediacy is vital to the successful identification and application of reading and math support through the general education program (Harlacher, Walker & Sanford, 2010).

2.3.1 Standards aligned instruction

The relationship between curriculum, instructional practices, assessments and their match to Pennsylvania Core standards is critical to effective MTSS programming. This alignment is the primary step to developing such a program of support. Instructional alignment is intended to lead to student improvements in learning opportunities and achievement (Porter, 2002). The degree to which teachers' instruction aligns with PA Core standards will be a contributing factor to the program's effectiveness, as these newly developed standards require precise alignment to implement with fidelity.

By using strategies that balance challenging and instructional levels, MTSS programming can focus on the learning needs of each student. The effect of teachers implementing this alignment then impacts program fidelity. Alignment among teachers in their first year in the classroom generally takes a secondary place to issues such as classroom management (Feiman-Nemser, 2003). Likewise, experienced teachers may need additional support for standards implementation (Hargreaves, 2005). Thus, professional development opportunities for all teachers need to be conducted in order to ensure instructional alignment with PA Core standards.

Standards alignment requires commitment of time and resources since standards stress higher order thinking and a broad depth of knowledge. These skills require a high level of

teacher skill that many do not currently possess (Lampert et al, 2013). Without staff having the knowledge and/or instructional practices to implement such an aligned system and an understanding of how this system is matched to PA Core standards, teachers will not develop the rigor necessary for successful MTSS implementation.

2.3.2 Universal screening

Universal screening is the first step in identifying the needs of students in a MTSS framework. It is the vehicle for targeting students who struggle to learn when provided an evidence and research-based education (Jenkins, Hudson, & Johnson, 2007). Universal screenings are typically conducted three times per school year—fall, winter, and spring—and consist of brief assessments focused on targeted skills. It is through these universal screenings that appropriate tiered interventions are aligned with student data and areas of need.

Johnson, Jenkins, Petscher, and Catts (2009) noted the critical nature of these screeners but found many of the tools used for universal screening within MTSS, when used in isolation, models have limited precision in diagnostic accuracy when used by themselves. In the Commonwealth of Pennsylvania, many districts utilize assessments such as the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) or AIMSWeb to determine current academic performance levels. These nationally normed measures provide better benchmarks from which to gauge a baseline as opposed to locally created assessments and norms (Linn, 2000).

The addition of a period of progress monitoring has also been shown to improve the diagnostic accuracy of screening measures (Compton, Fuchs, Fuchs, and Bryant, 2006). Similarly, Shapiro, Solari, and Petscher (2008) found that combining a universal screener with a

standards-based assessment increased student performance on statewide measures such as PSSA testing in the elementary grades.

To determine current performance levels and identify at-risk students, all students need to be screened with a research-based instrument—preferably with multiple measures. This data can then be analyzed to determine which tier of intervention is required as well as the instructional approach that can best promote growth. This follow-up is critical as it identifies curricular shortfalls and the interventions that students require (Hocutt, 1996).

Once a valid and reliable universal screener is found, it is imperative to use that assessment consistently. A change in the screener mid-year can result in a loss of comparable baseline data, duplication of time to retrain teachers, confusion with the new testing routine, and mixed signals to teachers (Hall, 2008).

2.3.3 Shared ownership

A collective, unified approach with shared ownership is necessary for MTSS to be effectively implemented in schools. Often, teachers operate in isolation and do not embed the resources available to students in their classrooms. Examples include Special Education, Title 1, and English as a Second Language, which operate in a "pull-out" or resource model. While inclusionary practices have increased over the past number of years, service delivery models must take on a greater role in the various tiers of MTSS models. The changing perspective of general education teachers being involved in more intensive tiers of instruction is one facet that must be sustained along with a general shared ownership. MTSS initiatives must be sustained at the school level and must be prepared for a multitude of challenges brought about by such system changes (Grimes, Kurns & Tilly, 2006).

Sustainability of an MTSS initiative then becomes synonymous with creating a culture of value regarding its implementation (McIntosh, Filter, Bennett, Ryan & Sugai, 2010). Creating this belief throughout a school and its siloed parts can be difficult to achieve. Professional development on the variety of teaching strategies required as well as a different form of staff utilization is necessary to create this culture and acceptance.

Creating shared ownership through sustainability also requires consideration of the natural changes that occur in a school's staff. Natural teacher "turnover" can potentially equate to instructional teams that do not believe in MTSS, thus setting it up for failure. New teachers must be provided with professional development to bring their level of knowledge to a comparable level with the team. Teams involved in the creation, execution, and analysis of data must be provided with professional development of effective teaming strategies that will allow them to choose and adapt the best model fitting their resources, increasing the sustainability of MTSS over time (Burns, et al., 2013).

The creation of teacher teams to lead MTSS efforts can assist in creating shared ownership. By including representatives from all staff areas—general education, special education, Title 1, ESL, counselors, paraprofessionals, and special area teachers—the collective efforts can best move towards successful integration. Chalfant & Pysh (1989) found the data-based decision making model and using an inquiry process can help ensure the academic success of all students.

2.3.4 Data-based decision making

Data-based decisions guide the MTSS framework. Various data sources—national, state, and local—are used to establish goals and intervene at increasing levels of intervention in order to

promote student achievement. In the Commonwealth of Pennsylvania these data sets include Pennsylvania System of School Assessment (PSSA), Pennsylvania Value Added Assessment System (PVAAS), and Study Island Benchmarks, as well as curriculum-based assessments and observational teacher data. Having a valid and reliable system of data allows groupings to match tiers of intervention as well as instructional strategies that promote the best opportunity for success. Rennert-Ariev (2008) found the original purpose of collecting data regarding student growth is frequently spoiled by the need to comply with accountability measures. Thus, the concept of data-based decision making is complex and requires a planned process in which data is useful and usable across multiple environments (McHatton, Little & Cramer, 2014)

Instructional leaders are expected to facilitate instructional change with data. The focus of classroom instruction has shifted from lower-level comprehension skills to increased rigor of performance-based measures (Ingersoll & Scannell, 2002). This change presents challenges to a data-based decision model that is necessary for MTSS to function effectively.

Schools must establish an effective procedure and process to gather and analyze data to respond to changing instructional needs. Schools are faced with the problem of creating of assessment procedures and increasing staff's capacity for making data-based decisions while implementing MTSS (VanDerHeyden & Tilly, 2011). Generally, teachers do not have adequate knowledge of how to use data effectively in order to drive instruction. Therefore, professional development is necessary to train staff in the gathering and analysis of data. Grade-level and building-level teams, who represent all grades and content areas, can review summative data (PSSA, PVAAS) as well as benchmark data (Study Island, DIBELS, AIMSWeb, etc.) and local assessments in order to make instructional adjustments and monitor progress. Additionally, these data analysis teams (DATs) are responsible for tiered interventions and to monitoring the

fidelity of implementation.

Progress monitoring is a crucial piece to effective MTSS implementation since the quality of interventions depends largely on the assessments. The monitoring to make decisions about the tier of support that students require may include unit tests or curriculum-based measures.

As students move through higher tiers of MTSS support, it becomes necessary to monitor progress more frequently. The importance of quality measures—reliable, valid, quick, easy to administer and correctly interpret, and with valid information that can directly and correctly influence instructional and tier-placement decisions—cannot be overestimated (Margolis, 2012). Monitoring student progress in a careful manner can improve instruction and, ultimately, student achievement.

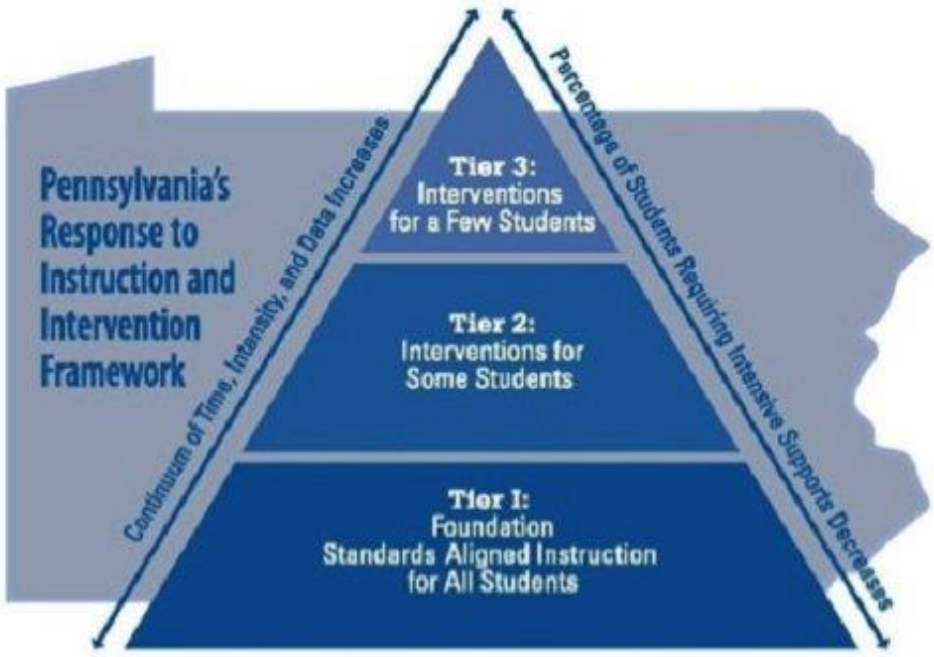
Student progress can then be measured through benchmarks. Progress monitoring benchmarks refer to data collected at specific times of the year to determine if students are making progress towards grade-level benchmarks (Wixson & Valencia, 2011). Benchmark assessments can be used as to determine the effectiveness of instruction since they are used multiple times per year. Results can be used to make changes to interventions or the level of tiered support. Since these benchmark assessments typically take on a broad scope of academics, the results should not be used to drive teacher instruction but rather as a reference point for achievement and growth

2.3.5 Tiered intervention and service delivery system

Pennsylvania's MTSS framework is a three-tiered model that uses standards and interventions to meet the varying needs of student learners (Figure 1). The framework is based on public health

prevention models (Caplan, 1964) and serves to increase the level of intervention as the population generally decreases.

Figure 1 - Pennsylvania Intervention Framework



Pennsylvania's Response to Instruction and Intervention Framework. Adapted from "Pennsylvania's Response to Intervention (RTI) Implementation Guide" by Pennsylvania Department of Education, 2010, p.18

Tier 1 aims to address the entire school population through core curriculum and instructional interventions for students progressing at grade-level expectancy. Tier 2 includes practices that are designed for students who do not make expected progress in the standards-aligned system. Students at this second level require interventions in addition to those provided in the existing curriculum. It is estimated that approximately 15 percent of students fall into Tier 2. Tier 3 provides the most intensive interventions for those students who are significantly below benchmarks. Tier 3 students require very diligent progress monitoring and highly focused

interventions. This is typically done for short time periods to demonstrate growth. Approximately 5 percent of students fall into Tier 3 (Searle, 2010).

Pennsylvania's model aligns with the three tenets that Mellard and Johnson (2008) identified for MTSS tier structures—early identification process to prevent student failures, coherence to other initiatives such as No Child Left Behind, and support within a district's capacity.

Another important distinction is the level of intensity that accompanies each tier. In the context of MTSS, intensity does not simply correlate with an increase in instructional time (e.g. giving students an extra "block" of reading support). Rather, with an additional increase in instructional time, there should also be more exposure to quality, research-based interventions. The "focus" would be the area of greatest need for the student. Questions surrounding the amount of additional time needed, the qualified person to deliver the instruction, and what specific intervention will occur will help to define the various MTSS tiers (MTSS Implementation Components: Ensuring Common Language and Understanding, 2013). Mellard (2009) suggests looking at duration, frequency, the amount of instructional time, group size, and teacher skill level as variables that can impact tiered interventions and service delivery models.

The amount of intervention has the potential to affect student learning. Furthermore, increasing the intensity of time, frequency, and duration of these interventions should progress as students move through the tiers. That is, students with the most need should have proportionally more time devoted to their interventions. However, the practicality of scheduling logistics prevents many schools from making this a reality. MTSS research (Fuchs & Fuchs, 2005) shows that Tier 2 interventions are clearly designated as a supplement to Tier 1; however, the level of intensity is not being matched to dosage research.

Class size is generally assumed to lessen as the more intensive tiers are undertaken. However, the research is mixed on whether this has an impact on student achievement. There are benefits to smaller class size in lieu of making instructional modifications (Finn & Achilles, 1990), however, studies have shown that when highly qualified teachers utilize a rigorous and well-planned intervention, academic benefits occur despite the number of students in a group (Elbaum, Vaughn, Hughes & Moody, 2000). To address the intensity of instruction in an effective MTSS model, student data and interventions must best utilize staff and their expertise.

How staff is best utilized depends on specific factors inherent in a school building environment. While an instructor's knowledge and quality of instruction can make a difference in student outcomes (Rowan, Correnti, & Miller, 2002), it should not automatically predetermine who teachers which tier or cluster of students. These decisions are best left to the building-level team who best knows the staff and students whom MTSS is designed to positively affect.

Flexible and fluid groupings are staples of an effective MTSS program as students progress forward or backward based on their achievement (O'Connor, Harty & Fulmer, 2005). Initial placement is determined by screening measures; however, progress monitoring should be used to determine movement.

Fidelity of implementation—assessments, instructional integrity, and procedures—are important aspects that will keep MTSS consistent and effective. Due to the complexity of MTSS and the numerous individuals involved, creating a systematic process must be embedded within the program itself. The National Research Center on Learning Disabilities (2007) suggests three dimensions for fidelity monitoring of MTSS including frequency, method, and support systems. Fidelity checks need to occur throughout the school year so that the data collected can be used for program modifications. The NRCLD approach includes elements of universal screening and

progress monitoring (NRCLD, 2007); however, it does not delve into how to go about monitoring these factors. Again, the practicality of implementing such a multifaceted fidelity check is difficult to manage in a school or district, however; the benefits of program fidelity and implementation are strong.

2.3.6 Family engagement

An often-overlooked aspect of effective MTSS programs is parent and family engagement (Furger, 2006). Pennsylvania's inclusion of this tenet as a piece of its essential framework is unique when compared to other states. The critical role of parents should be supported within the MTSS framework as numerous longitudinal studies have shown a strong association between parental involvement and positive outcomes (Bates, 2009; Gfellner, McLaren & Metcalfe, 2008).

To promote this engagement, parents need to be kept up to date with their children's progress aside from annual notifications. They need to understand the tiered interventions, how it affects their child, and ways to support progress. The Pennsylvania Department of Education (2010) indicates that parents must receive ongoing and precise information regarding their children's interventions and progress. This information should include the person teaching the intervention, characteristics of the intervention, and the student's area of concern. Progress monitoring data should be articulated to parents in a manner that is understandable.

2.4 APPLICATION TO THE INQUIRY SITE

The District chosen for this inquiry study has not implemented a systematic intervention framework and risks not providing students with consistent interventions to address areas of need. The District is in the vast minority, along with 29 percent of other school districts, that have not already adopted a responsive intervention system such as MTSS (Institute of Education Sciences, 2011). Currently, each of the seven elementary buildings in the District operate a student assistance program. A referral is made to the Elementary Student Assistance Program (ESAP) when concerns are noted by the teachers or parents. The ESAP Team utilizes a combination of academic, emotional, and behavioral components to help students to progress towards growth in the deficient area.

The ESAP team consists of parents, teachers, counselors, principals, school psychologists, and any other staff member who has a direct interest in the child. During the meeting, goals are developed as well as a data collection plan. Follow-up meetings are held to gauge progress and determine next steps.

ESAP is a program of student assistance that is used across Pennsylvania; its goals are to increase the student's success by collecting data, creating intervention plans, and monitoring student progress. Many districts now utilize an MTSS model instead of ESAP because of the consistency and available resources that MTSS involves. While ESAP attempts to use specific strategies to monitor and address obstacles to learning, its lack of consistency from building to building yields varying results.

To effectively meet the needs of the elementary students in the District, a structured and systematic intervention program needs to be instituted. The current framework outlined by the Pennsylvania Department of Education meets these needs through the six core characteristics of

MTSS: standards aligned instruction, universal screening, shared ownership, data-based decision making, tiered intervention and service delivery, and parent engagement. Through this framework research-based interventions matched to the instructional need and level of students can be implemented in the District.

2.5 STATEMENT OF INQUIRY QUESTIONS

Using this review of literature, a case study will be conducted within the context of the chosen elementary school setting. The staff's knowledge of MTSS and what factors that may inhibit the transition to a more inclusive MTSS framework will be examined. The inquiry questions surrounding this problem of practice include:

1. What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?
2. What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?

3.0 METHODOLOGY

This chapter describes the methodology, data collection procedures, and analysis used during the study. Descriptions of the approach, participants, instrumentation, content validity, data collection, data analysis, and methods are contained herein.

The purpose of the study is to review and investigate the implementation of an MTSS in an elementary school. The study used a survey to gather information from teachers in a suburban elementary school regarding their beliefs, perceptions, challenges, and perceived skill sets pertaining to the implementation of MTSS. A case study was conducted by examining the development of an MTSS through the theoretical framework outlined by the PDE. The six components of an MTSS—standards aligned instruction, universal screening, shared ownership, data-based decision making, tiered intervention and service delivery system, and parental engagement—help to assess readiness for implementation, establish priorities, develop a multi-year plan, implement the plan, and monitor and evaluate the interventions (Pennsylvania Department of Education, 2012). By using these six core characteristics, fidelity and sustainability of the MTSS program can be better achieved.

The study proposed to answer the follow research questions:

1. What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?

2. What factors need addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?

3.2 APPROACH

A case study approach was chosen to describe the intervention and explore the distinctive situations of school-based interventions in order to "bridge the gap between theory and practice and between the academy and the workplace" (Barkley, Cross, and Major 2005, p.182). This empirical inquiry investigates a real-life context with sources of evidence (Yin, 2003). The essence of this case study is to try to illuminate why the decision to implement MTSS is being made, including how it is being implemented and with what results (Schramm, 1971).

The inquiry setting for this case study is an elementary school in Western Pennsylvania with a student population of approximately 775 students. The District is considered high performing and is consistently ranked in the top 10 percent of PSSA and Keystone scores across the Commonwealth; it has also been nationally recognized for its academic performance. The District has a per pupil expenditure of over $17,000 for the 2016-17 school year and has increased or maintained enrollment over the past five years. Approximately 600 teachers with an average experience of 14 years, 67 percent of whom have a graduate degree, staff the district.

The school serves over 70 percent of the district's English as a Second Language (ESL) student population and serves 100 percent of the elementary emotional support population. The socioeconomic status of the building reflects the highest percentage of free and reduced lunch students, students receiving special education, and students receiving Title 1 services in the

district. To promote the success of all students, a systematic intervention program to address the varying needs of students is required. Therefore, the inquiry setting of this elementary school makes it a prime example of an underserved population who can benefit from MTSS.

3.3 PARTICIPANTS

The target population in this study included general education teachers, special education teachers, special area teachers, reading specialists, interventionists, and counselors from the selected site. The sample size of 46 (n=46) was targeted because these participants have a direct role in the implementation of MTSS in the school. They represent a cross section of the 57 total staff members in the building. Teacher responses were anonymized through their participation in the Qualtrics survey.

3.4 INSTRUMENTATION

The survey instrument entitled, "MTSS Teacher Survey" (Appendix A), was created in Qualtrics. The survey includes a cover letter with instruction on how to complete the survey. Additionally, there is a section of how the information will be collected and the anonymity associated with the study. The survey is comprised of 21 total questions. The format of the questions includes: rank order, short answer, multiple choice, and yes/no. There is one question regarding demographics that seeks data about the participants' number of years teaching. Additionally, questions are broken down into the six categories being used as the theoretical

framework (standard aligned instruction, universal screening, shared ownership, data-based decision making, tiered intervention and service delivery model, and family engagement). Each category contains questions asking participants to rank and prioritize various aspects within each component. Additionally, a section asks teachers to rank their skill levels with regards to data, resources, and interventions.

The online survey, developed through Qualtrics, was chosen for speed of response and accessibility for respondents. The Qualtrics survey offered respondents the ability to access, start and stop, and complete the survey from any device with internet access. The survey was optimized for mobile platforms to increase the rate of participation. The design of the survey instrument, ability to modify questions, dissemination, and data analysis through Qualtrics allowed for multiple advantages of electronic responses for participants.

To answer research question 1 (What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?), respondents were given questions surrounding the six tenets of PDE's MTSS framework and asked to rank their level of familiarity and alignment within each. A brief description of each of the tenets were listed before the section to ensure that all participants had a common understanding of the terms being used.

To answer research question 2 (What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?), respondents were asked to rate their skill levels regarding data, resources, and interventions. They were also asked to rate their familiarity and level of implementation for each of the six MTSS tenets as well as prioritizing what pieces of training are most necessary.

3.5 CONTENT VALIDITY

The survey is comprised of the viewpoints of teachers towards MTSS, their opinion of current implementation, the acquisition of skills necessary to carry out MTSS, and which of the six tenets need to be prioritized as the building moves forward. The questions are framed specifically by PDE's six tenets of MTSS implementation. The draft survey was reviewed by three professors from a large public university in addition to general education, special education, and interventionists from the school. Feedback was considered and the survey instrument underwent revisions based on these comments. After obtaining approval from the Doctoral Committee, permission for the instrument was received from the University of Pittsburgh Institutional Review Board (Appendix C).

3.6 RESPONSE BIAS

Since teachers' ability to answer willingly may create a bias during the survey, the impact of such participation and its results needs considered. Studies have documented how implicit bias can contribute to inequitable practice (Green et al., 2007) and so self-reporting mechanisms, such as surveys, can potentially have validity issues. Situational issues such as setting and who may be accessing results can also lead respondents to desirable responses (Brener, Billy, & Grady, 2003). To lessen this potential for bias, the anonymity of the survey was expressively conveyed.

Additionally, my direct involvement in the survey and the creation of an MTSS at the inquiry site is necessary to understand and apply the research findings. In effect, both participants and myself need to understand that through this inquiry we embrace the process and

not simply the product. The work towards an MTSS does not end when the system is functioning, rather, it is an iterative design. Per Cahill and Adams (1998), "No one ever arrives; they just bring more of themselves through each time" (p. 232). This collective development will assist in creating the shared ownership that is necessary for a MTSS system to be created and maintained.

3.7 DATA COLLECTION

Each teacher received an email explaining my role as the researcher and the scope of the study. The invitation to participate outlined the definition of MTSS, how the survey would be used to identify sustainable aspects of MTSS, how to best balance teacher needs with consistent interventions and procedures, and how teacher perspective provides valuable insight into the implementation of MTSS. A copy of the “Invitation to Participate” letter intended for the potential participants (Appendix D) was included in the email. An additional email was sent to the identified group of 57 staff members four days after the initial message went out in order to secure additional respondents.

All completed surveys generated data into Qualtrics. This program provided information relating to the number of teachers who completed the survey as well as those currently in process. Qualtrics provided the ability to analyze responses and create graphs as well as to export to Statistical Package for Social Sciences (SPSS) and comma separated values (csv) formats for additional statistical analysis.

3.8 DATA ANALYSIS

The study used a quantitative design. The data obtained was statistically analyzed using Qualtrics. Descriptive statistics were used, including mean, standard deviation, variance, count, and percentages. This information was calculated by Qualtrics for each question. The open-ended responses were analyzed to discover common themes. Responses were then calculated by percentage as they related to these emerging themes.

3.9 METHODS

A design rooted in survey research was selected for this study. Quantitative data was collected through survey items that consisted of closed and open-ended questions from teachers pertaining to the implementation of MTSS.

Survey methodology was utilized to investigate the research questions with quantitative analysis. The survey provided 46 teacher perceptions regarding their familiarity, experience, knowledge, attitude and perceived responsibilities about MTSS. These surveys provide a key stakeholder perspective since teachers share responsibility in the successful implementation of MTSS. The survey provides a baseline of data about teacher perceptions regarding MTSS broken down through the six tenets of PDE's MTSS model. Teacher selection was random among the approximate 57 instructional staff responsible for aspects of MTSS and represent a cross section of teaching experience. Table 1 represents the range of teaching experience from survey respondents. One respondent did not answer the question, therefore, the total response rate for the question is 45.

Table 1 - Years of Teaching Experience from Respondents

Experience in Years	Percentage	Total
0-4	13.3%	6
5-9	22.2%	10
10-14	11.1%	5
15-19	20.0%	9
20-24	13.3%	6
25+	20.0%	9
Total	100%	45

This survey method will provide perceptions and attitudes about the implementation of MTSS across the entire teaching staff. The responses can be attributed to the six core characteristics of successful MTSS implementation as provided from the PDE and the case study theoretical perspective.

Table 2 - Applied Inquiry Plan

Inquiry Question	Evidence	Design/Method	Analysis & Interpretation
What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?	The survey will be sent to a random collection of teachers at the inquiry site (n=46) which represents approximately 75% of the building staff population.	The data collected from the surveys will evaluate the current perception of intervention programs and how to merge current practice with the Pennsylvania Department of Education's 6 tenets of MTSS: • Standards Aligned System • Universal Screening • Shared Ownership • Data-based Decision Making • Tiered Intervention and Service Delivery System • Parental/Family Engagement (PaTTAN, 2008) This method will allow comparison between the perceived effectiveness of current interventions from various staff members.	The survey results will be analyzed to show teacher perceptions of the current intervention programs in comparison to the transition to MTSS. Additionally, by examining the knowledge of and attitude towards MTSS, a plan for the creation of such a MTSS model can be developed for the inquiry site. This directly impacts the "Shared Ownership" tenet of PDE's statewide MTSS model. Furthermore, the results will help to guide the creation of the MTSS program by identifying the areas of need and strengths from the staff who will be directly responsible for achieving the "Tiered Intervention and Service Delivery System" tenet of PDE's model.
What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?	Survey information will be collected from grade level teachers, intervention teachers, special education teachers, and special area teachers. This data will allow for further analysis of transitional factors with recommendations for creating a comprehensive MTSS program	The surveys will allow for a systematic inquiry about teacher perception in the move to a more comprehensive and inclusive intervention system. These surveys will allow respondents a consistent and reliable method to provide information since this topic of MTSS is already developed through the framework provided by the PDE.	The survey will allow for further examination of the creation of the building's MTSS model. These insights will be valuable as viewed through PDE's tenets

4.0 RESULTS

The focus of this study is to explore a change within the school's current intervention system to design and implement an effective MTSS program. This study focused on a single elementary school in a suburban district whose current intervention system is not responsive to the current level of student need.

4.1 PARTICIPANT DEMOGRAPHICS

The sample is comprised of 46 teachers at a single elementary building at the inquiry site. They include general education, special education, and special area teachers, along with reading specialists, interventionists, and counselors. Table 3 lists the descriptive data about the participant's years of teaching. The results showed an equal distribution across the years of service category. The highest percentage of respondents came from teachers with five to nine years of experience (22.2 percent), followed by 15-19 years (20.0 percent), and 25+ years (20.0 percent). One respondent did not answer the question, therefore, the total response rate for the question is 45. Specific job descriptions associated with the respondents were not requested since respondents could be identified due to the small number of specific teachers within each category

Table 3 - Years of Teaching Experience from Respondents

Experience in Years	Percentage	Total
0-4	13.3%	6
5-9	22.2%	10
10-14	11.1%	5
15-19	20.0%	9
20-24	13.3%	6
25+	20.0%	9
Total	100%	45

4.2 RESEARCH QUESTIONS

4.2.1 Research question 1

What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?

This question sought to examine teachers' knowledge surrounding the six tenets of PDE's MTSS framework and to rank their level of familiarity and alignment within each. A brief description of each of the tenets were listed before the section to ensure that all participants had a common understanding of the terms being used.

Questions 1 through 3 speak to the "Standards Aligned Instruction" tenet. The relationship between curriculum, instructional practices, assessments and their match to Pennsylvania Core standards is a critical element to effective MTSS programming. This alignment is the primary

step to developing strategies that balance challenging and instructional levels that can focus on the learning needs of each student. Standards alignment requires commitment of time and resources since they emphasize student depth of knowledge, higher order thinking, and adaptive application which places great demands on teachers.

For Question 1, teachers were asked to rate their alignment with a Likert scale (1=not strongly aligned, 5=strongly aligned) to the PA Core Standards. The results show that teachers strongly feel that their instruction (mean score=4.64) is aligned to PA Core Standards. Looking at this data further shows a slightly higher alignment to Math Standards (mean score=4.44) when compared to ELA Standards (mean=3.98). Teachers also responded strongly to their comfort level regarding increasing the rigor of their instruction (mean=4.27), which is an essential component of PA Core Standards. Table 4 represents responses to this question. One respondent did not answer the question, therefore, the total response rate for the question is 45.

Table 4 - Standards Aligned Instruction - Teacher Perception

Question 1

Category	Mean	Standard Deviation	Variance	Count
How aligned do you consider your instruction to be in terms of PA Core Standards?	4.64	0.70	0.50	45
How aligned do you consider the ELA curriculum to PA Core Standards?	3.98	0.98	0.95	43
How aligned do you consider the Math curriculum to PA Core Standards?	4.44	0.90	0.80	43
How aligned are your classroom-based assessments to PA Core Standards?	4.29	0.72	0.52	45
How comfortable are you with increasing the rigor in your instruction based on the materials available to you?	4.27	0.68	0.46	45

Question 2 asked teachers to rank order the professional development that they feel has aided most in their integration of PA Core Standards and instruction by using a Likert scale (1=most important, 5-least important). Teachers responded that "Personal Professional Development" was the most important (mean=2.52), closely followed by "Building Staff Meetings" (mean=2.54), and "District Professional Development" (mean=2.67). The "Differentiation Book Study" received the "least important" rating from teachers with a mean score of 4.28. Table 5 represents the responses.

Table 5 - Standards Aligned Instruction - Professional Development

Question 2

Professional Development Type	Mean	Standard Deviation	Variance	Count
Building Staff Meetings	2.54	1.38	1.90	46
Grade Level Meetings	2.74	1.33	1.76	46
Differentiation Book Study	4.28	0.99	0.99	46
Personal Professional Development	2.52	1.16	1.34	46
District Professional Development	2.67	1.34	1.78	46

Question 3 asked, through an open-ended response, what materials would further assist teachers with aligning instruction with PA Core Standards. From the responses, five common themes were found. Additional "PA Core Resources" were overwhelmingly the highest percentage of responses (65.2 percent). Teachers noted that these resources would assist with aligning both instruction and assessment. The five common themes are represented in Table 6. Respondents had the option to list all, some, or none of the themes identified. This results in counts that do not add up to the total 46 respondents.

Table 6 - Standards Aligned Instruction - Materials for Alignment

Question 3

Theme	Percentage	Count
Technology	8.6%	2
PA Core Resources	65.2%	23
PSSA Preparation Materials	4.3%	1
Professional Development	4.3%	1
Nothing Needed	17.4%	4

Questions 4 through 7 speak to the "Universal Screening" tenet. Universal screening is the first step in identifying the needs of students in a MTSS framework. It is the mechanism for targeting students who struggle to learn when provided a scientific, evidence-based general education. It is through these universal screenings that appropriate tiered interventions are aligned with student data and areas of need.

For Question 4, teachers were asked to rate their comfort level by using a Likert scale (1=extremely comfortable, 5=extremely uncomfortable) with administering and using data from a universal screener. Responses from teachers indicate that they are more comfortable giving the universal screener (mean=2.18) than with using the data obtained from it (mean=2.42). Table 7 represents responses to this question. One respondent did not answer the question, therefore, the total response rate for the question is 45.

Table 7 - Universal Screening - Teacher Comfort Level

Question 4

	Mean	Standard Deviation	Variance	Count
How comfortable are you with giving AIMSWeb+ as our universal screener?	2.18	1.23	1.52	45
How comfortable are you with using data from AIMSWeb+ in the classroom?	2.42	1.11	1.22	45

For Question 5, teachers were asked to identify their comfort level using a Likert scale (1=extremely comfortable, 5= extremely uncomfortable) regarding the challenges they faced with the universal screener. "Understanding testing protocol" received the highest average for being uncomfortable (mean=3.79). This was followed by "familiarity with TestNAV" (mean=3.14), the online component of entering student scores. Table 8 represents the responses. It should be noted that the total counts do not add up to the sample size of 46 as some respondents did not answer the question.

Table 8 - Universal Screening – Challenges

Question 5

Challenge	Mean	Standard Deviation	Variance	Count
Time to conduct	2.25	1.35	1.82	44
Understanding testing protocol	3.79	1.15	1.31	42
Familiarity with TestNAV (web based system)	3.14	1.15	1.31	42
Technical issues	2.41	1.37	1.88	44
Understanding results	3.12	1.50	2.25	42

For Question 6, teachers were asked to rank order the professional development that has been most helpful in learning and using a universal screener. The following scale was used: 1=most helpful, 5=least helpful. Teachers identified "Reading Specialist Support" (mean=2.23) as the most helpful type of professional development. This was followed by "Handouts" (mean=2.93) which were created by teachers. "Assessment binders" which were created by building level teams to show the sequence and questioning for each subtest and "Videos" which were created by the assessment company both had mean scores of 3.16. Table 9 represents the responses. Two respondents did not answer the question, therefore, the total response rate for the question is 44.

Table 9 - Universal Screening - Professional Development

Question 6

Professional Development Type	Mean	Standard Deviation	Variance	Count
Videos	3.16	1.49	2.22	44
Grade Level Meetings	3.26	1.54	2.38	43
Reading Specialist Support	2.23	1.00	0.99	44
Handouts	2.93	1.27	1.61	44
Assessment Binders	3.16	1.36	1.86	44

Question 7 asked teachers to identify the diagnostic measures that would benefit them in providing interventions for students. Teachers could select all, some, or none of the three options. This results in the total counts not equaling the 46 total respondents. "Standards Aligned Assessments" received the highest frequency with 41 counts, representing 89.1 percent. Following was "Common Grade Level Assessments" which received 40 counts and a percentage of 87.0 percent. Table 10 represents the responses.

Table 10 - Universal Screening - Diagnostic Measures

Question 7

Measure	Count	Percentage
Study Island Benchmarks	25	54.3%
Common Grade Level Assessments	40	87.0%
Standards Aligned Assessments	41	89.1%

Question 8 speaks to the "Shared Ownership" tenet. Shared ownership is a collective, unified approach which is necessary for MTSS to be effectively implemented. Service delivery models must take on a greater role in the various tiers of MTSS. The changing perspective of teachers being involved in more intensive tiers of instruction is one facet that must be sustained.

Question 8 asked teachers to evaluate their effectiveness, using a Likert scale (1=extremely effective, 5=not effective at all), on three aspects of shared ownership. The responses show that teachers feel a collective, unified approach is embraced by staff and is leading to better collaboration among the various teachers in the building. Table 11 represents the responses. The total counts of 43 and 45 reflects some respondents that did not answer the question.

Table 11 - Shared Ownership - Effectiveness Measure

Question 8

Measure	Mean	Standard Deviation	Variance	Count
How effective do you feel is the degree to which a collective, unified approach is embraced by staff?	2.35	0.86	0.74	43
How effective is the creation, execution, and analysis of data shared among staff?	2.42	0.95	0.91	45
How effective is MTSS leading to better collaboration among general education, special education, reading specialists, ESAP teachers, and other support staff?	2.33	0.94	0.89	45

Question 9 speaks to the "Data-Based Decision Making" tenet. Data-based decisions guide the MTSS framework. Various data sources are used to establish goals and intervene at increasing levels of intervention to promote student achievement. Having a valid and reliable system of data allows groupings to match tiers of intervention as well as instructional strategies that promote the best opportunity for success. National data sources received the highest effective rating with a mean of 3.31, followed by state data sources with a mean of 3.47, and then local data sources with a mean of 3.50. Table 12 represents the responses. One respondent did not answer the question, therefore, the total response rate for the question is 45.

Table 12 - Data-Based Decision Making - Effectiveness Measure

Question 9

Measure	Mean	Standard Deviation	Variance	Count
How familiar are you with national data sources (Iowa Test of Basic Skills, CoGAT) to make decisions regarding instruction and interventions?	3.31	1.01	1.01	45
How familiar are you with state data sources (PSSA, PVAAS) to make decisions regarding instruction and interventions?	3.47	1.00	1.00	45
How familiar are you with local data sources (AIMSWeb+, CBAs) to make decisions regarding instruction and interventions?	3.50	1.06	1.11	44
How familiar with the data based decision model (identify the problem, gather data, develop and implement a plan, monitor and evaluate the plan, determine next steps) are you?	3.69	0.94	0.88	45
How familiar are you in using data to drive instructional decisions in your classroom?	4.02	0.86	0.73	45

Questions 10-13 speak to the "Tiered Intervention and Service Delivery Model" tenet. The MTSS framework is a three-tiered model that uses standards and interventions to meet the varying needs of student learners. Fidelity of implementation—assessments, instructional integrity, and procedures—are important aspects that will keep MTSS consistent and effective.

Question 10 asked teachers to rate their comfort level with understanding the three-tier model of MTSS and creating flexible groups based on data by using a Likert scale was used

(1=extremely comfortable, 5= extremely uncomfortable). Teachers responded that they feel comfortable with understanding the three-tier MTSS model (mean=2.36) and creating flexible groups based on data (mean=2.02). Table 13 represents the results. One respondent did not answer the question, therefore, the total response rate for the question is 45.

Table 13 - Tiered Intervention and Service Delivery Model - Teacher Comfort Level

Question 10

Measure	Mean	Standard Deviation	Variance	Count
How comfortable are you with understanding the 3-tier model of MTSS?	2.36	0.92	0.85	45
How comfortable are you with creating flexible groupings based on data?	2.02	0.95	0.91	45

Question 11 asked teachers to rate the effectiveness of MTSS in identifying students prior to failure, aligning to other school initiatives, and implementation regarding current staffing. A Likert scale was used (1=extremely effective, 5= not effective at all) with responses listed in Table 14. The mean score of 3.40 shows the teachers' reflection that current staffing may not align with an adequate service delivery model. Three respondents did not answer the question, therefore, the total response rate for the question is 43.

Table 14 - Tiered Intervention and Service Delivery Model - Effectiveness Ratings

Question 11

Measure	Mean	Standard Deviation	Variance	Count
How effective is MTSS in identifying students prior to failure?	2.19	0.69	0.48	43
How effective is MTSS in aligning to other school initiatives?	2.37	0.75	0.56	43
How effective is MTSS implemented in terms the district's current staffing	3.40	0.92	0.84	43

Question 12 asked teachers to rate the fidelity of assessments, instruction, and procedures with MTSS by using a Likert scale was used (1=strong amount of fidelity, 5= no fidelity at all). The highest level of fidelity was reported on assessment aligning with MTSS (mean=1.85) followed by instruction (mean=2.02) and procedures (mean=2.12). Responses are listed in Table 15. 5 respondents did not answer the question so the total count is 41.

Table 15 - Tiered Intervention and Service Delivery Model - Fidelity Rating

Question 12

Measure	Mean	Standard Deviation	Variance	Count
How much fidelity is placed on assessments aligning with MTSS	1.85	0.90	0.81	41
How much fidelity is placed on instruction aligning with MTSS?	2.02	0.84	0.71	41
How much fidelity is placed on procedures aligning with MTSS?	2.12	0.97	0.94	41

Question 13 asked teachers to rate their agreement or disagreement with regard to supplemental instruction meeting grade-level benchmarks, implementation of more differentiated practices in the general education classroom, and the implications of additional staff support on such interventions. A Likert scale was used (1=strongly agree, 5= strongly disagree). The highest level of agreement came from the statement indicating that general education teachers would be able to implement more differentiated and flexible interventions with additional staff support (mean=1.31). Responses are listed in Table 16. One respondent did not answer the question, therefore, the total response rate for the question is 45.

Table 16 - Tiered Intervention and Service Delivery Model - Agreement Ratings

Question 13

Measure	Mean	Standard Deviation	Variance	Count
The primary function of supplemental instruction is to ensure that students meet grade-level benchmarks.	2.02	0.81	0.66	44
General education classroom teachers can implement more differentiated and flexible instructional practices to address the needs of a more diverse student body through MTSS.	1.62	0.80	0.64	45
General education classroom teachers would be able to implement more differentiated and flexible interventions if they had additional staff support.	1.31	0.66	0.44	45

Questions 14 through 15 speak to the "Family Engagement" tenet. Family engagement is a critical component and unique aspect of Pennsylvania's MTSS model. It seeks to keep families up to date with their children's progress through the various assessments and tiers of intervention.

Question 14 asked teachers to identify the communication means that they use to keep parents informed of student progress. Teachers could select all, some, or none of the five options. Therefore, the response rate does not equal the sample size of 46. The highest percentage of usage came from email (93.5 percent) followed by conference (84.8 percent) and phone calls (76.1 percent). Table 17 represents the responses.

Table 17 - Family Engagement - Communication Type

Question 14

Communication Type	Count	Percentage
Phone Calls	35	76.1%
Email	43	93.5%
Newsletters	24	52.2%
Conferences	39	84.8%
Communication Log/Notes Home	32	69.6%

Question 15 asked teachers to identify the frequency of communication they use to keep parents informed of student progress. Teachers could select all, some, or none of the five options. Therefore, the response rate does not equal the sample size of 46. The results represent a normal distribution curve with "monthly" receiving a percentage rate of 50.0 percent. Table 18 represents the responses.

Table 18 - Family Engagement - Communication Frequency

Question 15

Frequency	Count	Percentage
Daily	10	21.7%
Weekly	21	45.7%
Monthly	23	50.0%
Quarterly	16	34.8%
Each Semester	7	15.2%

4.2.2 Research question 2

What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?

Question 16 sought to examine teachers' skill level regarding data, resources, and interventions. Teachers used a Likert scale (1=I do not have this skill at all, 5=I am highly skilled in this area and could teach others this skill) to respond to a series of 13 statements. The statements were broken into three categories—data, resources, and interventions.

Teacher responses to the data statements show similar finding in terms of using data to make decisions about Tier 1 of interventions (mean=3.47), defining the area of concern (mean=3.68), and using data to define the current level of performance (mean=3.67). Table 19 represents the responses. One respondent did not answer the question and therefore the count does not equal the sample size of 46.

Table 19 - Teacher Skill Survey – Data

Question 16

Statement on Data	Mean	Standard Deviation	Variance	Count
Access the data necessary to determine the percent of students in core instruction who are achieving benchmarks.	3.16	0.94	0.89	45
Use data to make decisions about individuals and groups of students for the core academic curriculum (tier 1).	3.47	0.98	0.96	45
Define the referral concern in terms of what the student should be able to do	3.68	0.97	0.94	44
Use data to define the current level of performance of the target student	3.67	0.87	0.76	45

Teacher responses to the resources statements show that teachers do not feel they possess the skill to calculate the gap between students' current performance and grade level benchmark (mean=2.91). Teachers report that they feel they have the skill to determine the desired level of performance (mean=3.60), determine the current difference for peer students and targeted students (mean=3.53), and identify an appropriate supplemental intervention (mean=3.44). Table 20 represents the results. One respondents did not answer the question, therefore, the count for this question is 45.

Table 20 - Teacher Skills Survey – Resources

Question 16

Statement on Data	Mean	Standard Deviation	Variance	Count
Determine the desired level of performance (i.e., benchmark) for the student	3.60	0.93	0.86	45
Determine the current level of peer performance for the same skill as the target student	3.53	0.83	0.69	45
Calculate the gap between student current performance and the benchmark (district grade level standard)	2.91	0.98	0.97	45
Use gap data to determine whether core instruction should be adjusted or whether supplemental instruction should be directed to the target student	2.84	0.79	0.62	45
Identify the appropriate supplemental intervention available in my building for a student identified as at-risk	3.44	0.98	0.96	45

Teacher responses to the intervention statements show decreasing skill perception in terms of accessing resources for interventions in Tier 1 (mean=3.51), Tier 2 (mean=3.40), and Tier 3 (mean=3.24) resources. Table 21 represents the results. One respondents did not answer the question, therefore, the count for this question is 45.

Table 21 - Teacher Skill Survey – Interventions

Question 16

Statement on Data	Mean	Standard Deviation	Variance	Count
Access resources to provide evidence-based interventions for core curricula (tier 1).	3.51	0.96	0.92	45
Access resources to provide evidence-based interventions for supplemental curricula (tier 2).	3.40	0.95	0.91	45
Access resources to provide evidence-based interventions for individualized intervention plans (tier 3).	3.24	1.04	1.07	45
Ensure that any supplemental and/or intensive interventions are integrated with core instruction in the general education classroom:	3.49	1.00	1.01	45

Question 17 asked teachers to rate their familiarity with each of the six MTSS tenets by using a Likert scale (1=extremely familiar, 5= not familiar at all). Teachers rated "Universal Screening" as the most familiar (mean=2.30) with "Shared Ownership" as the least familiar (mean=2.95). Table 22 represents the responses. Two respondents did not answer the question, therefore, the count for this question is 44.

Table 22 - Teacher MTSS Familiarity

Question 17

MTSS Tenet	Mean	Standard Deviation	Variance	Count
Standards Aligned System	2.52	1.01	1.02	44
Universal Screening	2.30	1.01	1.03	44
Shared Ownership	2.95	1.22	1.50	44
Data-Based Decision Making	2.32	0.97	0.94	44
Tiered Intervention & Service Delivery	2.57	1.03	1.06	44
Family Engagement	2.41	1.01	1.01	44

Question 18 asked teachers to rate their level of implementation for each of the six MTSS tenets by using a Likert scale (1=extremely effective, 5= not effective at all). Teachers rated "Universal Screening" as the most effective (mean=2.13) and "Shared Ownership" as the least effective (mean=2.80). Table 23 represents the responses. Some respondents did not answer the question, therefore, the count for this question does not equal the sample size of 46.

Table 23 - Teacher MTSS Implementation

Question 18

MTSS Tenet	Mean	Standard Deviation	Variance	Count
Standards Aligned System	2.36	0.85	0.72	45
Universal Screening	2.13	0.81	0.65	45
Shared Ownership	2.80	0.76	0.57	44
Data-Based Decision Making	2.39	0.83	0.69	44
Tiered Intervention & Service Delivery	2.64	0.64	0.41	45
Family Engagement	2.57	0.84	0.70	44

Question 19 asked teachers to prioritize what pieces of training are most necessary by rank ordering the six MTSS tenets (1= most important, 6=least important). Teachers rated "Tiered Intervention & Service Delivery" as the most important (mean=1.82) and "Universal Screening" (mean=4.47) as the least important. Table 24 represents the responses. Some respondents did not answer the question, therefore, the count for this question does not equal the sample size of 46

Table 24 - Teacher MTSS Training Prioritization

Question 19

MTSS Tenet	Mean	Standard Deviation	Variance	Count
Standards Aligned System	3.86	1.47	2.17	43
Universal Screening	4.47	1.25	1.55	43
Shared Ownership	3.44	1.65	2.71	43
Data-Based Decision Making	2.93	1.44	2.06	43
Tiered Intervention & Service Delivery	1.82	1.15	1.33	44
Family Engagement	4.21	1.69	2.86	43

Question 20 asked teachers to prioritize what components they feel are most important to the successful implementation of MTSS by rank ordering the six MTSS tenets (1= most important, 6=least important). Teachers rated "Tiered Intervention & Service Delivery" as the most important (mean=2.64) and "Family Engagement" (mean=4.68) as the least important. Table 25 represents the responses. Some respondents did not answer the question, therefore, the count for this question does not equal the sample size of 46.

Table 25 - Teacher MTSS Component Implementation Prioritization

Question 20

MTSS Tenet	Mean	Standard Deviation	Variance	Count
Standards Aligned System	3.45	1.78	3.16	44
Universal Screening	3.20	1.52	2.30	44
Shared Ownership	3.93	1.75	3.06	44
Data-Based Decision Making	2.69	1.38	1.90	45
Tiered Intervention & Service Delivery	2.64	1.34	1.78	45
Family Engagement	4.68	1.66	2.76	44

4.3 SUMMARY

Teacher perceptions regarding their familiarity, experience, knowledge, attitude and perceived responsibilities about MTSS were obtained through the survey and analysis. The data regarding MTSS, as viewed through the six tenets of PDE's MTSS model, provided perceptions and attitudes about the implementation of MTSS across the entire teaching staff of the inquiry site.

Research Question 1 (What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?) showed that teachers generally feel their instruction aligns to PA Core Standards (Standards Aligned System tenet). Teachers specifically noted that resources directly connecting their instruction with PA Core resources were most effective over other forms of resources and professional development. Data showed that teachers showed comfort with understanding and administering AIMSWeb+ (Universal Screening tenet).

They noted that using the web-based system associated with the screener as the largest area of concern, however, the direct support from reading specialists was the most helpful resource in administering the test. Teachers responded that generally they feel a collective, unified approach is embraced by staff and is leading to better collaboration among the various teachers in the building (Shared Ownership tenet). National data sources received the highest effective rating for teachers to drive classroom instruction (Data-Based Decision Making tenet). Teachers responded that they feel comfortable with the three-tier MTSS model (Tiered Intervention and Service Delivery Model); however, the current staffing may not best support an adequate service delivery model. Teachers identified monthly emails as the most common type of communication being used to address MTSS (Family Engagement tenet).

Research Question 2 (What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?) showcased teachers' skill levels regarding data, resources, and interventions as well as familiarity, level of implementation, and fidelity of each of the six MTSS tenets. Teachers responded that their ability to use data is consistent through the data-based decision making model; however, they do not feel they possess the skill to calculate the gap between students' current performance and grade level benchmark. This information is continued in the responses that show decreasing skill in terms of accessing resources for interventions in Tiers 1, 2, and then 3. Teacher familiarity was rated highest in the "Universal Screening" tenet with "Shared Ownership" as the least familiar. For level of implementation, teachers rated "Tiered Intervention & Service Delivery" as the most effective. Teacher prioritized "Tiered Intervention & Service Delivery" as the most important tenet for MTSS to be effectively implemented.

The data received from the survey supports that teachers understand the philosophy of MTSS as a framework of instruction that provides support to students. Teacher responses show there is an understanding of how MTSS tiers provide varying levels of support for students who are struggling to reach mastery as well as those who require enrichment to extend their learning. Furthermore, results show that teachers feel that MTSS provides a framework that incorporates screening, progress monitoring and data-based decision making to provide effective instruction.

MTSS requires the collaboration of individuals across the district. This collaboration ensures a comprehensive system to improve student achievement using effective, high quality, differentiated classroom instruction and research-based interventions matched to the instructional need and level of the student. Results of the survey suggest that teacher roles in the building and district need to be further defined. This will allow specification of roles in data teams, district steering committees, and action plan members.

5.0 SUMMARY AND CONCLUSIONS

This chapter contains the summary of the study including an interpretation of the findings, discussion, and suggestions for future research.

5.1 SUMMARY

The purpose of this inquiry is to explore a change within the current school intervention system in order to design and implement an effective MTSS program. Through this inquiry, the sustainable aspects of an effective MTSS program can be applied through the six components that PDE has outlined.

The study attempted to answer the following research questions

1. What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?
2. What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?

The first question investigated teachers' beliefs and attitudes surrounding the six tenets of PDE's MTSS framework and asked them to rank their level of familiarity and alignment within each. This question sought to analyze teacher perceptions toward the transition to MTSS. Additionally, by examining the knowledge and attitude of MTSS, a plan for the creation of such

a MTSS model can be developed for the district. Furthermore, the results will help to guide the creation of the MTSS program by identifying the areas of needs and strengths from the staff who will be directly responsible for achieving the tiered interventions through an MTSS service delivery system.

To answer research question 2 (What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?), respondents were asked to rate their skill level regarding data, resources, and interventions. They were also asked to rate their familiarity and level of implementation with each of the six MTSS tenets as well as to prioritize the most necessary pieces of training.

The findings showcased the challenges that teachers experience when executing interventions in an MTSS reform. The findings also present the teachers' prioritization of items aligned to the six PDE components of MTSS. These skills need to be considered in order to implement a structured and systematic response to academic intervention plans.

The sample was comprised of 46 teachers from an elementary school that is beginning the process of creating an MTSS in the Commonwealth of Pennsylvania. The sample represented teachers from all staff categories including regular education, special education, reading specialists, interventionists, special area teachers, and counselors. Teachers years of experience showed an equal distribution across the years of service category. The highest percentage of respondents came from teachers with 5 through 9 years of experience (22.2 percent), followed by 15 through 19 years (20.0 percent), and 25+ years (20.0 percent).

5.2 INTERPRETATION OF FINDINGS

5.2.1 Question 1

What is the staff's pedagogical knowledge of MTSS regarding their ability to support its inclusive and systematic processes?

Several conclusions can be made regarding the staff's knowledge of MTSS and its inclusive and systematic processes. These conclusions can be broken down within the six PDE tenets to reveal the level of teacher familiarity and alignment.

The "Standards Aligned System" tenet discusses the alignment of curriculum, instruction, and assessment to PA Core standards which is a critical piece to effective MTSS programming. The results of the survey showed that teachers feel a strong alignment between their instruction and PA Core standards. This alignment is the first step to develop strategies to meet the various needs of students throughout the MTSS tiers. This belief is supported by the literature as instructional alignment is intended to lead to student improvements in learning opportunities and achievement (Porter, 2002). Furthermore, the study revealed that teachers felt a smaller degree of alignment with ELA and Math curricula than with their own instruction. This variation can contribute to the overall effectiveness of an MTSS program as PA Core standards require precise alignment and fidelity.

The need for additional support for standards implementation requires professional development opportunities for all teachers (Hargreaves, 2005). Teachers consistently responded that various types of professional development—building staff meetings, grade level meetings, personal and district professional development—have aided in the integration of PA Core standards and instruction. This analysis follows what the literature emphasizes regarding the

commitment of time and resources necessary to the depth of knowledge and higher order thinking required in today's classrooms (Lampert et al, 2013). Without this knowledge, teachers will not be able to implement practices to such an aligned system which was evidenced in the survey as 65.2 percent of respondents identified "PA Core Resources" as the most necessary piece in aligning their instruction and assessment.

The transition from PA Academic Standards to the more rigorous PA Core Standards was a daunting task for teachers. At the inquiry site, proactive measures were put in place to ease the burden of this transition and give teachers a better understanding of the framework and instructional changes necessary to meet the new requirements. Time was devoted during the school year for discussion and exploration of how standards and curriculum align. This allowed for a better understanding of the intersection between eligible content and daily instruction.

"Universal Screening" is the initial step in the MTSS framework and is the vehicle for targeting students who struggle to learn when provided a research-based education (Jenkins, Hudson, & Johnson, 2007). Teachers responded with a slight difference in their comfort level between giving a universal screener and using data from it. This discrepancy may be attributed to a lack of understanding in the data-based decisions that drive the MTSS model. The analysis of data and subsequent level of intervention is a critical shortfall identified in the literature (Hocutt, 1996). Additionally, the survey showed that teachers are uncomfortable with understanding testing protocol and interpreting results. If teachers cannot give the universal screener with fidelity or disaggregate the data appropriately, then they will struggle to place students in appropriate interventions.

The survey also revealed that more individualized approaches to professional development for universal screening, such as "Reading Specialist Support" and "Assessment

Binders," received more helpful responses than group administered formats such as "Grade Level Meetings" and "Videos" developed by the testing manufacturer. The literature speaks to the next step in "Universal Screening" being a period of progress monitoring that has been shown to improve the diagnostic accuracy of screening measures (Compton et al., 2006). "Standards Aligned Assessments" were identified by 89.1 percent of teachers identified as the diagnostic measure that would benefit them in providing interventions for students.

At the inquiry site, a core team was involved in the selection of the universal screener. This group consisted of a combination of regular education, special education, Title 1 teachers, and interventionists. This core team assisted with the dissemination of information and procedures regarding testing protocol. Title 1 teachers also sat with teachers during their initial testing with students which aided in increasing the comfort level and reducing anxiety. These proactive measures helped to focus the universal screening on testing results and not testing procedures. As subsequent iterations of benchmarking have occurred, the core team has recommended changes to aid in testing administration and data analysis.

"Shared Ownership" is the collective, unified approach that must be sustained at the school level in order for MTSS to be effectively implemented and sustained (Grimes et al., 2006). Teachers responded that this approach is embraced by staff as evidenced through data analysis and collaboration among staff members. This finding supports the role of general teachers being involved in increasing tiers of intensity rather than silos such as special education, Title 1 services, or gifted education. Continuing to build upon this culture of shared values will help to sustain the MTSS initiative (McIntosh et al., 2010).

After sustaining shared ownership of MTSS, "Data-Based Decision Making" allows for data sources to guide goals in the tiers of MTSS. The process of using data to drive instructional

decisions requires a deliberate approach in order for the process to move beyond operational silos and into the entire school system (McHatton et al., 2014). Teachers identified a high degree of familiarity in using data to drive instruction and with the data-based decision model. VanDerHeyden and Tilly (2011) found this skill acquisition to be one of the biggest challenges for schools trying to implement MTSS.

Creating a sense of shared ownership at the inquiry site involved listening to and validating teacher concerns about MTSS. In-service days have been utilized to create a common definition and understanding of the steps necessary in the process as well as the collective response necessary for the successful creation of MTSS. Grade level meetings have been used to further delve into this unified approach which allowed administrators to address specific concerns based on teacher experience and questions. Related service personnel such as Title 1 teachers, special education teachers, and interventionists have been included in these discussions to further support the shared ownership necessary for MTSS success.

The emphasis then becomes progress monitoring and the reliance on valid and reliable assessment measures. Teachers responded that as assessments become less localized, staff level of familiarity decreases as well. This situation will require professional development in the areas of national and state data sources in order to improve instruction and, ultimately, student achievement.

The "Tiered Intervention and Service Delivery System" of MTSS operates in a tiered model in which intensity of instruction is increased as the need for intervention arises. Teachers responded that they feel comfortable with the three-tier model and creating flexible groups based on data. The literature supports this alignment as early identification helps to prevent student failure through the tiered levels of MTSS (Mellard & Johnson, 2008). The level of intervention,

however, does not simply mean an increase in instructional time. Rather, the focus on high quality, research-based instruction takes precedence over how much and who is delivering the intervention.

Teacher responses show that there is a disconnect between the level of MTSS implementation and current staffing. Teachers responded strongly that their ability to implement more differentiated and flexible interventions is limited by the lack of additional staff support. This finding also shows that "Shared Ownership" may not be fully embraced by staff and that the history of siloed programming (special education, reading support, etc.) may still pose a barrier to successful MTSS implementation. The literature indicates that a teacher's quality of instruction can directly impact the student's outcomes (Rowan et al., 2002); however, it should not automatically predetermine who teaches which tier or cluster of students.

Due to the complexity of MTSS, fidelity of implementation—assessments, instructional integrity, and procedures—are important factors that will keep MTSS consistent and effective. Teachers responded that a strong amount of fidelity is placed on instruction and procedures aligning with MTSS. This finding supports what the National Research Center on Learning Disabilities suggests for fidelity monitoring of MTSS—frequency, method, and support systems (2007).

"Family Engagement" plays a critical role within the MTSS framework as numerous longitudinal studies have shown a strong association between parental involvement and positive outcomes (Bates, 2009; Gfellner et al., 2008). Teachers responded that weekly and monthly communication via email or conferences are the most widely used aspects of family communication. This finding supports PDE's statement regarding ongoing and precise information regarding parental involvement in children's interventions and progress.

5.2.2 Question 2

What factors need to be addressed and developed regarding the move to a comprehensive MTSS as opposed to the current operational silos?

Several conclusions can be made regarding the factors that result from the move to a more comprehensive MTSS model. When looking at teacher skills through their use of data, it shows a level of understanding and decision making in using data to drive Tier 1 instruction. As the literature shows, an increase in intensity occurs as movement shifts to more intensive interventions (Gersten et al., 2009). Thus, Tier 1 instruction should be meeting about 80 percent of student needs, with 15 percent being met through Tier 2 and 5 percent through Tier 3. Unless Tier 1 is meeting the 80 percent requirement through the core curriculum, the subsequent tiers cannot be expected to effectively intervene in student needs. The focus of school programming needs to meet this 80 percent criteria before looking at additional supplements.

At the inquiry site, the focus during the first year of implementation has been on addressing Tier 1 (core instruction) meeting 80% of student needs. In-service days have been utilized to showcase teachers using differentiation in the classroom and how colleagues can implement these resources in their own classrooms. Specific, pre-packaged differentiation materials have been distributed to teachers to begin moving intervention services into the general education classroom. This has begun to address the need to push students out of the general education classroom to receive support and has lessened the "siloed" effect of students needing additional tiers of support. The inquiry site is preparing for a dedicated intervention period during the upcoming academic year building upon the Tier 1 focus of this year. Much time, research, and investigation has gone into various intervention programs and how they can be implemented in the MTSS system.

Teachers responded that they do not feel prepared to calculate the gap between current student performance and benchmark standards. This discrepancy could explain why students in Tier 1 are not making expected progress and are referred for additional interventions. Teachers need professional development to understand the impact of core curriculum (Tier 1) interventions and how this data and resources should change their instruction. This immediacy is vital to the successful identification and application of reading and math support through the general education program (Harlacher et al., 2010).

In terms of intervention access and the move to a comprehensive MTSS, teachers respond with decreasing skill perception as the intensity of tiers increased. Thus, teacher access to resources for interventions lessens as groups of students demonstrate more intense need. This finding shows that teachers are not embracing the service delivery model of MTSS and are falling back to the siloed intervention model. As student needs become more intense and do not respond to core instruction, there is a lessened degree of ownership on the teacher's part. It is important to remember that MTSS is not a stand-alone initiative but is embraced and implemented by all staff members (National Association of State Directors of Special Education, 2006).

Teachers ranked "Tiered Intervention and Service Delivery" as the most effectively implemented tenet of PDE's MTSS framework. This discrepancy from their belief accessing resources shows that additional professional development is needed. Additionally, teachers ranked "Family Engagement" and then "Shared Ownership" as the least familiar and the least important MTSS tenet. Creating a school-wide emphasis on learning and increasing the expectations of all students, as well as creating shared ownership, is an essential component of MTSS (Buffum, Mattos, & Weber., 2009).

The capacity of teachers at the inquiry site has increased since the survey data has been collected. This can be attributed to teachers becoming more comfortable with Tier 1 instruction and making interventions accessible for students in the general education classroom. The "Shared Ownership" has also increased due to several factors since the initial data was collected. Teachers feel more connected to MTSS after being given specific guidelines and intervention programs. By replacing and not adding to teachers' numerous responsibilities, staff have begun to stretch their instruction through differentiation. Numerous staff members have also brought their previous experience with MTSS, through college coursework or work in previous districts, which has aided the collective response of shared ownership. Additionally, new teachers must satisfy the PA certification requirements of having 9 credits or 270 hours of special education coursework (Pennsylvania Department of Education, 2016). This understanding of special education procedures and instruction has aided in the transition to MTSS and has moved the collective group forward.

The low turn-over rate of teachers in the inquiry site also supports a gradual increase of shared ownership for MTSS. Whereas, many schools and districts face a continual cycle of professional development regarding initiatives for new teachers, the inquiry site does not experience this level of staffing change. By having the same core group of teachers year annually, professional development can be built-upon instead of starting at the beginning.

5.3 LIMITATIONS

There are limitations to this study. The findings represent only the inquiry site within the Commonwealth of Pennsylvania and may not be generalized to other states with a different

framework for MTSS. While the sample size (n = 46) is representative of the inquiry site's teaching population, caution should still be taken before drawing conclusions from the study.

Additionally, the survey questionnaire may have validity problems due to self-reporting from the teachers. Research has shown that socially desirable responses can result from having a survey given where a positive influence is expected (Brener et al., 2003). The author attempted to stress the anonymity of responses to combat this limitation.

5.4 DISCUSSION

This study contributes to MTSS research as the effective creation of such a program is being pursued. The comprehensive nature of MTSS is markedly different from the educational silos that exist at the inquiry site. The results of this study examine the six tenets of PDE and how they contribute to an ability to support MTSS' inclusive and systematic processes. The study also addresses the transition to this collective understanding for teachers. MTSS is a framework that allows early intervening strategies to be targeted for students based on research-based intervention and data-informed decisions. While much has been written about MTSS, feedback from teachers has not been studied to the same extent. The information obtained from teachers is critical since they are an essential part of MTSS. By examining the six major components—standards aligned system, universal screening, shared ownership, data-based decision making, tiered intervention and service delivery, and family engagement—the development of an MTSS system can be started which would address the need to provide immediate and consistent interventions to facilitate student growth.

As part of this MTSS creation, procedures regarding the multiple tiers of research-based instruction situated around the three tiers is necessary. For students in Tier 1, who are reaching district benchmark goals with core instruction within the regular curriculum using classroom accommodations and differentiation, progress monitoring is done through the universal screener. Further progress monitoring may be necessary for those students who score at the low end of the benchmark goal. Additionally, data is used to determine if a student continues at Tier 1 or is considered for an intervention.

Tier 1 is the research-based core curriculum that is delivered with fidelity. Students receive systematic and explicit instruction following the research-based effective teaching principles situated around the 5 critical elements of reading—phonemic awareness, phonics, fluency, vocabulary, and comprehension (Drury & Walter, 2014). This reading instruction should occur for 90 minutes daily and include differentiated planning, instruction and assessment. Teachers also use universal screening data to create flexible instructional groups for reading. It should be noted that along with classroom reading instruction, ESL instruction is part of the core curriculum (Tier 1) for English Language Learners (ELLs). Steps should be taken to guard against taking from this time when scheduling a Tier 2 or 3 intervention.

Tier 2 include students who are falling below the grade level benchmark goals. They receive school-wide interventions that are based on research with rate of improvement (ROI) being closely monitored. Data is collected bi-weekly with progress monitoring probes that match the instructional focus of the intervention. After appropriate data collection, student can return to Tier 1, continue the intervention, or be considered for a different intervention after a minimum of 10 consecutive data points.

Tier 2 instruction include strategic and targeted interventions for at-risk students. They should begin as soon as possible after identification of those not responding adequately to differentiated Tier 1 instruction regardless of time of year. Family communication should be in place to solicit input and support as students enter the intervention process, which is managed by the classroom, intervention, or Title 1 teacher. In addition to Tier 1 instruction, students receive Tier 2 interventions for at least 30 minutes a day, a minimum of 4 days per week.

Classroom teachers, special education teachers, Title 1 teachers, interventionists, ESL teachers, and other related services personnel collaborate to implement high quality, research-based instruction. The pacing of the instruction matches each student's skill level and gives students multiple opportunities to respond.

Tier 3 includes students that have not made adequate measureable progress when provided a research-based intervention for a minimum of 10 data points. These students' ROI is closely monitored and they receive a research-based standard protocol intervention. Data is collected weekly and progress monitoring probes match the instructional focus of the intervention. After an appropriate length of intervention, students may return to Tier 2, continue the intervention, receive a more intensive intervention, receive an additional layer of intervention, or be recommended for a multi-disciplinary evaluation.

Tier 3 includes intensive interventions for low performing students using a standard protocol with an instructional group of 1:3 instructor-to-student ratio. In addition to the 90-minute core curriculum, students will receive approximately 60 minutes of additional intensive interventions from Tiers 2 and/or 3 each day.

This study also contributes to those in education leadership who are attempting a system change by removing barriers to student learning through MTSS. The practical application

necessary to achieve such a change also requires a high degree of knowledge surrounding the six tenets. This symbiotic relationship is vital in creating and sustaining an effective MTSS.

6.0 IMPLICATIONS

Increasing the sample size would allow for further analysis of the six tenets and how they are viewed by teachers across the Commonwealth of Pennsylvania. This information could be used to compare how various districts have successfully or unsuccessfully implemented an MTSS. The study could also be expanded to look at comparison data among districts of varying sizes, populations, and demographics.

Further examination of PDE's six framework tenets could be viewed to see how their interaction affects the sustained ability of a school or district to meet evolving student needs through MTSS. The dynamic nature of MTSS and its comparison to the slow nature of system change can provide insight into determining how to best support MTSS. This could be accomplished through additional gathering of data from the inquiry site to see the progression from its initial stages. Comparing this data to other sites and extending it to the district level would also allow for further inquiry.

Additionally, utilizing interviews and focus groups of teachers and administrators around the six tenets of MTSS can provide a qualitative data for further investigation.

Lastly, the implementation steps necessary for an MTSS requires exploration. MTSS must be responsive to student needs, which differ from schools and districts; however, a consistency must be maintained. This consistency ensures alignment with research and best practices while still meeting student needs. After this investigation, a systematic plan for

addressing detailed steps in the MTSS process should be developed and should include the integration of PDE's six tenets. An MTSS handbook would significantly contribute to the next steps for schools and districts looking to provide immediate and consistent interventions to facilitate student growth.

APPENDIX A

MTSS TEACHER SURVEY

The Pennsylvania Department of Education's MTSS framework is situated around six major components: Standards Aligned System, Universal Screening, Shared Ownership, Data-Based Decision Making, Tiered Intervention & Service Delivery, and Family Engagement. As we begin to undertake our MTSS model, it is important to know your opinion of these components and how to best design an intervention program around them.

Standards Aligned Instruction – The relationship between curriculum, instructional practices, assessments and their match to Pennsylvania Core standards is a critical element to effective MTSS programming. This alignment is the primary step to developing strategies that balance challenging and instructional levels that can focus on the learning needs of each student. Standards alignment requires commitment of time and resources since they emphasize student depth of knowledge, higher order thinking, and adaptive application that places great demands on teachers.

Question 1: Answer the following questions using the scale below.

How aligned do you consider your instruction to be in terms of PA Core Standards? (1)	❍	❍	❍	❍	❍
How aligned do you consider the ELA	❍	❍	❍	❍	❍

curriculum to PA Core Standards? (2)					
How aligned do you consider the Math curriculum to PA Core Standards? (3)	❍	❍	❍	❍	❍
How aligned are your classroom-based assessments to PA Core Standards? (4)	❍	❍	❍	❍	❍
How comfortable are you with increasing the rigor in your instruction based on the materials available to you? (5)	❍	❍	❍	❍	❍

Question 2: Rank order the following professional development supports that you feel have aided in your integration of PA Core Standards and instruction (1=most important, 5=least important).

_____ Building Staff Meetings (1)
_____ Grade Level Meetings (2)
_____ Differentiation Book Study (3)
_____ Personal Professional Development (4)
_____ District Professional Development (5)

Question 3: What materials do you feel would further assist you with aligning your instruction with PA Core standards?

Universal Screening – Universal screening is the first step in identifying the needs of students in a MTSS framework. It is the mechanism for targeting students who struggle to learn when provided a scientific, evidence-based general education. It is through these universal screenings that appropriate tiered interventions are aligned with student data and areas of need. Currently AIMSWeb+ is being used as our universal screener.

Question 4: Answer the following questions using the scale below.

How comfortable are you with giving AIMSWeb+ as our universal screener? (1)	❍	❍	❍	❍	❍
How comfortable are you with using data from AIMSWeb+ in the classroom? (2)	❍	❍	❍	❍	❍

Question 5: Rank the following items in terms of what has been the greatest challenge with AIMSWeb+ (1=greatest challenge, 5=least challenge).

_____ Time to conduct (1)
_____ Understanding testing protocol (2)
_____ Familiarity with TestNAV (web based system) (3)
_____ Technical issues (4)
_____ Understanding results (5)

Question 6: Rank the following professional development that has been the most helpful in learning and using AIMSWeb+ (1=most helpful, 5=least helpful)

_____ Videos (1)
_____ Grade level meetings (2)
_____ Reading Specialist support (3)
_____ Handouts (4)
_____ Assessment binders (5)

Question 7: What type of diagnostic measure(s) would benefit you in providing interventions for students (select all that apply)?

Study Island Benchmarks (1)	❑
Common Grade level assessments (2)	❑
Standards aligned assessments (3)	❑

Shared Ownership - A collective, unified approach with shared ownership is necessary for MTSS to be effectively implemented. Service delivery models must take on a greater role in the various tiers of MTSS. The changing perspective of teachers being involved in more intensive tiers of instruction is one facet that must be sustained.

Question 8: Answer the following questions using the scale below.

How effective do you feel is the degree to which a collective, unified approach is embraced by staff? (1)	❍	❍	❍	❍	❍
How effective is the creation, execution, and analysis of data shared among staff? (2)	❍	❍	❍	❍	❍
How effective is MTSS leading to better collaboration among general	❍	❍	❍	❍	❍

education, special education, reading specialists, ESAP teachers, and other support staff? (3)					

Data-Based Decision Making - Data-based decisions guide the MTSS framework. Various data sources are used to establish goals and intervene at increasing levels of intervention to promote student achievement. Having a valid and reliable system of data allows groupings to match tiers of intervention as well as instructional strategies that promote the best opportunity for success.

Question 9: Answer the following questions using the scale below.

How familiar are you with national data sources (Iowa Test of Basic Skills & CoGAT) to make decisions regarding instruction and interventions? (1)	❍	❍	❍	❍	❍
How familiar are you with state data sources (PSSA, PVAAS) to make decisions regarding instruction and interventions? (2)	❍	❍	❍	❍	❍
How familiar are you with local data sources (AIMSWeb+, CBAs) to make decisions regarding instruction and interventions? (3)	❍	❍	❍	❍	❍
How familiar with the data based decision model	❍	❍	❍	❍	❍

(identify the problem, gather data, develop and implement a plan, monitor and evaluate the plan, determine next steps) are you? (4) How familiar are you in using data to drive instructional decisions in your classroom? (5)	❍	❍	❍	❍	❍

Tiered Intervention and Service Delivery Model - Pennsylvania's MTSS framework is a three-tiered model that uses standards and interventions to meet the varying needs of student learners. Fidelity of implementation—assessments, instructional integrity, and procedures—are important aspects that will keep MTSS consistent and effective.

Question 10: Answer the following questions using the scale below.

How comfortable are you with understanding the 3-tier model of MTSS? (1) How comfortable are you with creating flexible groupings based on data? (2)	❍ ❍	❍ ❍	❍ ❍	❍ ❍	❍ ❍

Question 11: Answer the following questions using the scale below.

How effective is MTSS in identifying students prior to failure? (1)	❍	❍	❍	❍	❍
How effective is MTSS in aligning to other school initiatives? (2)	❍	❍	❍	❍	❍
How effective is MTSS implemented in terms the district's current staffing (3)	❍	❍	❍	❍	❍

Question 12: Answer the following questions using the scale below.

How much fidelity is placed on assessments aligning with MTSS (1)	❍	❍	❍	❍	❍
How much fidelity is placed on instruction aligning with MTSS? (2)	❍	❍	❍	❍	❍
How much fidelity is placed on procedures aligning with MTSS? (3)	❍	❍	❍	❍	❍

Question 13: Rate how strongly you agree or disagree with the following statements.

The primary function of supplemental instruction is to ensure that students meet grade-level benchmarks . (1)	❍	❍	❍	❍	❍
General education classroom teachers can implement more differentiated and flexible instructional practices to address the needs of a more diverse student body through MTSS. (2)	❍	❍	❍	❍	❍
General education classroom teachers would be able to implement more differentiated and flexible interventions if they had additional staff support . (3)	❍	❍	❍	❍	❍

Family Engagement - This critical component is a unique aspect of Pennsylvania's MTSS model and seeks to keep families up to date with their child's progress through the various assessments and tiers of intervention.

Question 14: In what ways do you keep families informed about progress of students (select all that apply)?

Phone calls (1)	❑
Emails (2)	❑
Newsletters (3)	❑
Conferences (4)	❑
Communication log or notes home (5)	❑

Question 15: How frequent do you communicate with families regarding their child's progress?

Daily (1)	❑
Weekly (2)	❑
Monthly (3)	❑
Quarterly (4)	❑
Each Semester (5)	❑

Question 16: Please read each statement about a skill related to assessment, instruction, and/or intervention below, and then evaluate YOUR skill level within the context of working at McKnight Elementary. Please use the following response scale: 1 = I do not have this skill at all 2 = I have minimal skills in this area; need substantial support to use it 3 = I have this skill, but still need some support to use it 4 = I can use this skill with little support 5 = I am highly skilled in this area and could teach others this skill

The skill to...

Access the data necessary to	❍	❍	❍	❍	❍

determine the percent of students in core instruction who are achieving benchmarks. (1)					
Use data to make decisions about individuals and groups of students for the core academic curriculum (tier 1). (2)	❍	❍	❍	❍	❍
Define the referral concern in terms of what the student should be able to do (3)	❍	❍	❍	❍	❍
Use data to define the current level of performance of the target student (4)	❍	❍	❍	❍	❍
Determine the desired level of performance (i.e., benchmark) for the student (5)	❍	❍	❍	❍	❍
Determine the	❍	❍	❍	❍	❍

current level of peer performance for the same skill as the target student (6)					
Calculate the gap between student current performance and the benchmark (district grade level standard) (7)	❍	❍	❍	❍	❍
Use gap data to determine whether core instruction should be adjusted or whether supplemental instruction should be directed to the target student (8)	❍	❍	❍	❍	❍
Identify the appropriate supplemental intervention available in my building for a student identified as at-risk for: (9)	❍	❍	❍	❍	❍
Access resources to provide evidence-based interventions	❍	❍	❍	❍	❍

for core curricula (tier 1). (10)					
Access resources to provide evidence-based interventions for supplemental curricula (tier 2). (11)	❍	❍	❍	❍	❍
Access resources to provide evidence-based interventions for individualized intervention plans (tier 3). (12)	❍	❍	❍	❍	❍
Ensure that any supplemental and/or intensive interventions are integrated with core instruction in the general education classroom: (13)	❍	❍	❍	❍	❍

The final section asks you specific questions about the 6 components of MTSS.

Question 17: What is your MTSS familiarity with each of the following:

Standards Aligned System (1)	❍	❍	❍	❍	❍
Universal Screening (2)	❍	❍	❍	❍	❍
Shared Ownership (3)	❍	❍	❍	❍	❍
Data-Based Decision Making (4)	❍	❍	❍	❍	❍
Tiered Intervention & Service Delivery (5)	❍	❍	❍	❍	❍
Family Engagement (6)	❍	❍	❍	❍	❍

Question 18: What is your school's level of MTSS implementation with each of the following

Standards Aligned System (1)	❍	❍	❍	❍	❍
Universal Screening (2)	❍	❍	❍	❍	❍
Shared Ownership (3)	❍	❍	❍	❍	❍
Data-Based Decision Making (4)	❍	❍	❍	❍	❍
Tiered Intervention & Service Delivery (5)	❍	❍	❍	❍	❍
Family Engagement (6)	❍	❍	❍	❍	❍

Question 19: Prioritize what components you would you like more training on? (1=most important, 6=least important)

_____ Standards Aligned System (1)
_____ Universal Screening (2)
_____ Shared Ownership (3)
_____ Data-Based Decision Making (4)
_____ Tiered Intervention & Service Delivery (5)
_____ Family Engagement (6)

Question 20: Prioritize what components you feel are most important to the successful implementation of MTSS (1=most important, 6=least important)

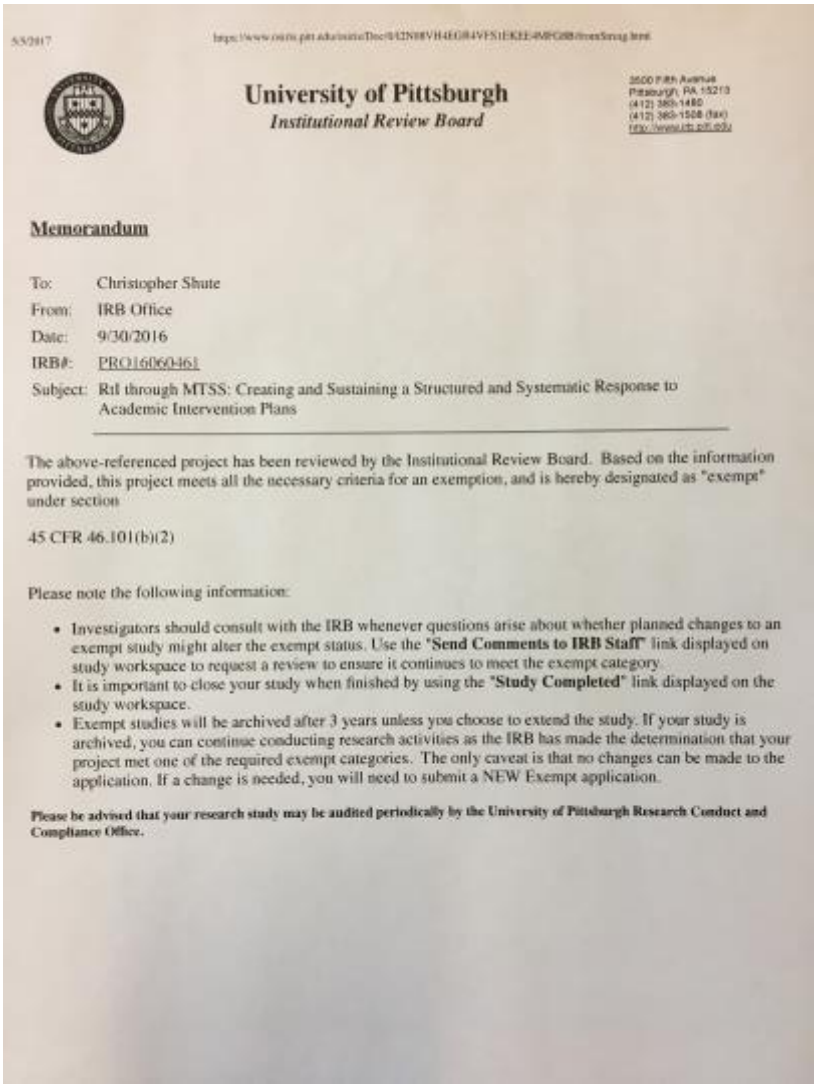
_____ Standards Aligned System (1)
_____ Universal Screening (2)
_____ Shared Ownership (3)
_____ Data-Based Decision Making (4)
_____ Tiered Intervention & Service Delivery (5)
_____ Family Engagement (6)

Question 21: How many years have you been teaching (including this year)?

_____ 0-4 years
_____ 5-9 years
_____ 10-14 years
_____ 15-19 years
_____ 20-24 years
_____ 25+ years

APPENDIX B

FIGURE 2 - IRB APPROVAL



5/5/2017

University of Pittsburgh
Institutional Review Board

3500 Fifth Avenue
Pittsburgh, PA 15213
(412) 383-1480
(412) 383-1508 (fax)
http://www.irb.pitt.edu

Memorandum

To: Christopher Shute
From: IRB Office
Date: 9/30/2016
IRB#: PRO16060461
Subject: RtI through MTSS: Creating and Sustaining a Structured and Systematic Response to Academic Intervention Plans

The above-referenced project has been reviewed by the Institutional Review Board. Based on the information provided, this project meets all the necessary criteria for an exemption, and is hereby designated as "exempt" under section

45 CFR 46.101(b)(2)

Please note the following information:

- Investigators should consult with the IRB whenever questions arise about whether planned changes to an exempt study might alter the exempt status. Use the **"Send Comments to IRB Staff"** link displayed on study workspace to request a review to ensure it continues to meet the exempt category.
- It is important to close your study when finished by using the **"Study Completed"** link displayed on the study workspace.
- Exempt studies will be archived after 3 years unless you choose to extend the study. If your study is archived, you can continue conducting research activities as the IRB has made the determination that your project met one of the required exempt categories. The only caveat is that no changes can be made to the application. If a change is needed, you will need to submit a NEW Exempt application.

Please be advised that your research study may be audited periodically by the University of Pittsburgh Research Conduct and Compliance Office.

APPENDIX C

RECRUITMENT LETTER

Dear Teachers,

Multi-Tiered Systems of Support (MTSS) is a framework that allows early intervening strategies to be targeted for students based on research-based intervention and data-informed decisions. Our building has been delving into the development of a MTSS model through the use of a universal screener and targeted intervention blocks. As part of this roll-out, a short web-based survey is being conducted.

This survey will help to identify the sustainable aspects of MTSS and how to best balance teacher needs with consistent interventions and procedures. Although much has been written regarding MTSS, very few studies have requested information from teachers. As a teacher, it is critically important to gain information from you because you are an integral part of the MTSS system.

Your perspective can provide valuable information as to the effectiveness of MTSS practices based on what you see in your classroom and in the school. Your participation in this study is entirely voluntary. All results will be kept confidential; your name will not be included on any documents. The survey should only take approximately 10 minutes to complete.

Your response is very important to the success of this study. The information gained from this study will provide valuable insight into MTSS practices used in our school.

To complete the survey, just click on this link: (link to survey embedded here)

The survey will open right away. Or, you may cut and paste this link into your Internet browser or access it from a mobile device.

If you have any questions or concerns about the survey, please feel free to contact me directly at css45@pitt.edu. Thank you in advance for your help. Your participation is greatly appreciated.

Christopher Shute

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