Developing Tier One Within a Multi-Tiered Systems of Support Framework

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With pressure from the Pennsylvania Department of Education to increase student literacy, school districts across the state have adopted a multi-tiered support system (MTSS). The MTSS framework provides a structure for using data to guide changes in teaching and learning to promote the success of all students. According to research, the success of implementing MTSS starts with high-quality professional development. This study focuses on developing and delivering a series of professional development opportunities aimed at increasing 32 middle school teachers' knowledge of the MTSS framework and the skills necessary to access and use data to make informed decisions when planning for intervention within core instruction. Quantitative data collected through a survey after each professional development session showed teacher growth and learning in the essential components of the MTSS framework and accessing and interpreting data from the universal screener to utilize when planning for Tier 1 instruction and intervention. However, more intensive development may be needed in using the gathered data to adjust classroom instruction based on student learning needs. Teacher perception data collected through exit tickets assessing the format and structure of the professional development session also showed satisfaction with the design and implementation of each session. Accordingly, these results suggest that high-quality professional development does support teacher learning as schools move towards implementing MTSS.

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1.0 Introduction to the Problem of Practice

Pressures continue to increase across the Commonwealth of Pennsylvania, and the entire nation, as schools are held accountable for improving achievement and growth data on state assessments. Schools struggle with the prescriptive approaches to remediation as a reactive response to low student performance versus a proactive approach. These standardized approaches for remediation do not account for the individual academic, behavioral, and social-emotional needs of particular students at particular schools.

In this context, many schools fail to support teachers in their use of student data for the monitoring of student growth, or lack thereof. This results in the improper implementation of remediation and intervention programs hastily purchased and employed by schools. The lack of knowledge and skills to implement these programs and to analyze student data contributes to learning environments where schools flounder to ensure the success of intervention programs. While answers to questions surrounding effective academic intervention remain unknown, federal and state legislators continue to use student data to assess a district's educational success.

Over the past two decades, despite the federal mandates of No Child Left Behind (NCLB) in 2002 and the Every Student Succeeds Act (ESSA) in 2015 requiring all public schools to administer and monitor student progress on standardized assessments, states continue to show minimal student achievement gains. In 2019, the National Assessment of Educational Progress (NAEP), a congressionally mandated program that is overseen and administered by the National Center for Education Statistics (NCES) in the U.S. Department of Education and the Institute of Education Science, published a comprehensive analysis of public-school data and found little evidence of growth (National Center for Education Statistics, 2022). While Pennsylvania's

average reading literacy score was higher than the national average, scores between 2017 and 2019 were not significantly different and are not on track to meet the goals set forth by Pennsylvania's Consolidated State Plan (National Center for Education Statistics, 2019b). In 2019, the National Assessment of Educational Progress (NAEP) administered a reading assessment to a sample of fourth and eighth-grade students across the nation to measure trends in academic achievement in the United States (*NAEP Reading: Reading Results*, n.d.). As a result, The Nation's Report Card was published and reported that 61 percent of Pennsylvania's fourth-grade students scored below the proficient level in reading compared to 60 percent in 2017 and 66 percent in 2002 when No Child Left Behind came into effect (National Center for Education Statistics, 2019a). This lack of growth in student literacy scores does not provide the assurance that districts will meet the intended outcomes set forth by the state of Pennsylvania.

According to Pennsylvania's Consolidated State Plan (2019), created as a result of ESSA, by 2030, a long-term goal of at least 80.8 percent of all students should earn proficient or advanced scores on the state assessments measuring academic performance for English Language Arts content standards. The following table shows various subgroups' combined goals for all Pennsylvania assessments (Pennsylvania System of School Assessment (PSSA), Keystone Exam, and Pennsylvania Alternate System of Assessment (PASA) for English Language Arts (Table 1). Statistics such as these have continued to force state departments of education and districts to reevaluate and challenge their current literacy instruction practices.

Table 1. Pennsylvania's English Language Arts Data

Student Group	English Language Arts: Baseline Data 2015 Percent Proficient/Advanced	English Language Arts: Long-Term Goal 2030 Percent Proficient/Advanced
All Students	62	81
White	69	85
African American/Black	36	68
Hispanic	40	70
Asian (not Hispanic)	78	89
American Indian or Alaskan Native	55	78
Multi-Racial (not Hispanic)	55	78
Hawaiian Native/Pacific Islander	70	85
Students with Disabilities	25	63
English Learners	12	56
Economically Disadvantaged	44	72

(*Every Student Succeeds Act Pennsylvania Consolidated State Plan*, 2019)

The next table provides a more in-depth look at the state results, specifically for PSSAs administered in grades 5 and 6 for the past five years (Table 2). The overall trend of this data is a small decrease in the number of students each year performing at proficient or advanced levels; however, it does show a small increase in the number of students who perform within that range between their fifth and sixth grade year. There is also a small gap in data because of the COVID-19 pandemic. During the pandemic, schools were first shut down and then reinstated to varying degrees, thus causing PDE to cancel all 2020 state assessments.

Table 2. Pennsylvania System of School Assessment State Proficiency Results

	Grade 5	Grade 6
	English Language Arts: Percent Proficient/Advanced	English Language Arts: Percent Proficient/Advanced
2021	55	57
2020	No state testing was administered due to the pandemic	
2019	59	63
2018	59	63
2017	60	64

(PDE, 2022b)

The Pennsylvania Department of Education developed Pennsylvania's State Literacy Plan (PaSLP) (2019) to help districts reach the 2030 goal in response to such concerning statistics. According to the plan, schools must support students to "become well-educated citizens with a command of literacy that prepares them for the challenges of the 21st century and enables them to achieve their personal and professional goals" (PDE, 2019). To help facilitate student learning, Pennsylvania adopted a multi-tiered system of support (MTSS) to support students' literacy growth as part of "a system of robust supports that can be used by schools to guide systems change and transform teaching and learning to enhance students growth and achievement" (*Pennsylvania Dep. Educ.*, 2019a). Through a continuum of supports, the MTSS framework provides the structure for using valid and reliable data for decision-making as an integral part of the process.

As a part of implementing the MTSS framework, teachers must access and understand the student data to implement evidence-based instructional practices (Slanda & Little, 2020). Educators need job-embedded opportunities "to learn to work collaboratively, to share ideas about instructional practices, to discuss openly what was working and what was not working as effectively in meeting student needs" to promote reflective teaching (PDE, 2019). Without sustained targeted professional development to gain an understanding of MTSS and how to use data to implement instructional strategies with clear and consistent goals, teachers may not provide the appropriate learning opportunities for students who are struggling to meet end-of-year learning targets in reading.

1.1 Purpose of the Study

This study, anchored in the development and delivery of a series of professional development opportunities, will focus on teachers' increased knowledge of the MTSS framework and the skills necessary to access and use data to make informed decisions when planning for intervention within core instruction. As the school implements the MTSS framework through improvement science, a problem-solving approach using small measurable changes to identify the root cause (Perry et al., 2020), teachers must develop the skills to use student data to identify academic standards that have not been met and for which students are in need of an intervention. Furthermore, exploring the professional development's usefulness, format, and structure will help inform the next steps and additional training opportunities.

1.2 Local Context

The study was conducted at a middle school in a Western Pennsylvania public school district that, like many others, is committed to providing additional support to those struggling with reading. For this study, the school will be referred to as School X. In the selected middle school, PSSA data in English Language Arts suggest that students are on track to meet the state requirement; however, a slow regression in overall scores has developed over the past few years. Eighty-six percent of students met or exceeded the state expectation of academic performance on the English Language Arts PSSA in 2017; however, in 2018, 84 percent, and in 2019, 84 percent, met the expected proficiency levels (Table 3).

Table 3. School X PSSA Data for English Language Arts

	2017 Percent Proficient/Advanced	2018 Percent Proficient/Advanced	2019 Percent Proficient/Advanced
Fifth Grade	86	84 (-2%)	82 (-2%)
Sixth Grade	86	85 (-1%)	85
Overall School Data	86	84 (-2%)	84

However, it is important to note that the data collected and compared in Table 3 reflects different students each year. Therefore, to further explore the trends of this data, a more comprehensive look into the same student population year after year yielded similar results, with an overall decrease in students scoring within the proficient/advanced performance levels (Table 4). In Table 4, the historical data of the graduating class of 2023 shows a decline in the number of students who score within the proficient or advanced range on the English Language Arts assessment. There is a large decline in the 2020-2021 school year, with only 66 percent of students performing within the proficient and advanced range, which falls below the 80 percent long-term goal by the state. This decrease may be a result of the interrupted education of students during the COVID 19 pandemic.

Table 4. School X PSSA Data following the Class of 2028 for English Language Arts

	Below Basic	Basic	Proficient	Advanced
Grade 5 2020-2021 (n=239)	4%	30%	50%	16%
Grade 4 2019-2020	No state testing was administered due to the pandemic			
Grade 3 2018-2019 (n=225)	1%	13%	51%	34%

While the trend of the overall school data is still above the state goal of 80 percent, this decrease in the trend of percentage of students demonstrating proficiency of the state standards on the PSSA has caused some obvious concern to teachers and school officials. Not only are teachers questioning the decrease in overall student performance despite their instructional efforts in the classroom, but they also recognize the impact it has on their Professional Employee Evaluation. According to PDE, student performance data comprises 10 percent of the overall classroom teacher's evaluation rating (Pennsylvania Department of Education, 2022). Teachers have also recognized that although over 80 percent of the students historically are performing within the state's predetermined desired range, there is still a significant number of students who are not. In 2021, after returning to school from the pandemic, only 66 percent of students scored within or above the proficient range. Discussions have been focused on instructional improvements to ensure all students have equitable access to the curriculum and students are making appropriate growth. Therefore, the school has recognized a need to develop a tiered system of support to proactively identify individual academic needs to ensure students meet or exceed state expectations.

Within the multi-tiered system of support framework, teachers must develop a skill set to collect and interpret student data to support informed instructional decisions through the lenses of curriculum, instruction, and assessment. They must "develop a sophisticated skill set that includes the ability to differentiate instruction and provide ALL students…with meaningful access to high expectations and rigor within the context of grade level standards/curriculum" (Pennsylvania Training and Technical Assistance Network, 2022).

1.3 Problem of Practice

As the data has shown, the school is not showing gains in English Language Arts. Instead, students at School X have declined in proficiency levels based on three years of Pennsylvania System of School Assessment (PSSA) data. Through informal conversation, teachers have expressed that they are inadequately prepared to use data from the universal screener, NWEA Map Growth Assessment, to identify the academic needs for the core instruction of students entering their classrooms and then implementing differentiated interventions using the MTSS framework to support students demonstrating a deficiency in one or more English Language Arts standards. While they recognize data are collected through the NWEA Map Growth Assessment, their knowledge of accessing and interpreting this type of student data to make informed instructional decisions within their classrooms using the MTSS framework is limited.

Therefore, the review of supporting scholarship will focus on three guiding questions:

- What does the literature say about the MTSS framework?
- What does the literature say about implementing the MTSS framework with fidelity?
- What does the literature say about evidenced-based MTSS professional development?

1.4 Glossary of Key Terms

The following definitions are specific to this study.

- Differentiation: Differentiation is a process used to adapt instruction to meet individual student needs while all learning the same instructional goal.

- English Language Arts: In Pennsylvania, English Language Arts (ELA) are courses focused on developing students' literacy skills, specifically reading, writing, speaking, and listening (PDE., 2021a).
- Every Student Succeeds Act: The Every Student Succeeds Act (ESSA) of 2015 is a federal education law reauthorizing the Elementary and Secondary Education Act (ESEA) of 1965 and replacing the No Child Left Behind Act (NCLB). ESSA provides flexibility for state education agencies to develop their own systems to measure school performance, establish expectations for students, and plan to meet the desired standards (PDE., 2021b).
- Future Ready PA Index: The Future Ready PA Index provides the public with comprehensive data on school progress and student success (*Pennsylvania Dep. Educ.*, 2021b).
- Multi-Tiered System of Supports: A Multi-Tiered System of Support (MTSS) is a tiered framework designed to promote the success of all students by using valid and reliable data to enhance students' academic, behavioral and social-emotional outcomes *(PaTTAN - Multi-Tiered System of Supports,* 2018).
- MTSS Interventionist: An MTSS interventionist provides intervention through research-based strategies, tracks progress monitoring data to see how students are responding, and makes adjustments as necessary (PanoramaEducation, n.d.).
- No Child Left Behind Act: The No Child Left Behind Act of 2001 (NCLB) reauthorized the Elementary and Secondary Act of 1965 and required all states to create accountability plans to measure standards-based educational outcomes through state assessments (US Department of Education, 2005).

- NWEA MAP Growth: NWEA MAP Growth is a research-based assessment that measures student growth and proficiency in English Language Arts and Mathematics administered three times per year in the fall, winter, and spring (*NWEA Home*, 2021).
- Pennsylvania's Consolidated State Plan: As the result of ESSA, the Pennsylvania Consolidated State Plan was developed to focus on state and local accountability to improve student achievement by supporting both teachers and students (*Pennsylvania Dep. Educ.*, 2019b).
- Pennsylvania Department of Education: The Pennsylvania Department of Education (PDE) oversees all publicly funded K-12 educational organizations and libraries (*Pennsylvania Dep. Educ.*, 2021c).
- Pennsylvania State Literacy Plan: In 2019, PDE updated its literacy plan (PaSLP) to provide educators with information and guidance to develop, implement, and evaluate literacy learning programs in schools (PDE., 2019b).
- Pennsylvania System of School Assessment (PSSA): The Pennsylvania System of School Assessment (PSSA) is a standards-based end-of-year assessment for grades 3 through 8; it measures student attainment of academic standards in English Language Arts, Mathematics, and Science and Technology (*Pennsylvania Dep. Educ.*, 2021d).
- Pennsylvania Training and Technical Assistance Network (PaTTAN): In collaboration with the PDE and the Bureau of Special Education, the Pennsylvania Training and Technical Assistance Network (PaTTAN) has been developed to provide professional development and assistance to education professionals to improve student learning. (*PaTTAN - Home*, 2018).

- Professional Learning Community: A PLC is a team of educators working collaboratively by focusing on four guiding questions that examine the skills and knowledge students need to increase achievement (DuFour et al., 2016).
- RIT Score- A RIT (Rasch Unit) measures the performance on the MAP Growth assessment to assess and compare academic achievement and growth (NWEA, n.d.).
- Special Education Teacher- This term refers to teachers who provided educational support and services to identified students affected by a disability.

2.0 Review of Supporting Scholarship

2.1 The MTSS Framework

2.1.1 Federal and State Legislation for State Standardized Assessment

In 2015, President Barak Obama signed The Every Student Succeeds Act (ESSA), which replaced No Child Left Behind (NCLB) and reauthorized the Elementary and Secondary Education Act (ESEA) as the nation's primary education law. The goal of ESSA is to provide all students, including those who have been historically marginalized, access to an education that prepares them for college and career readiness (Every Student Succeeds Act (ESSA), 2020; "Targeted Support and Improvement," 2020). Under NCLB, schools had to meet Adequate Yearly Progress in academic benchmarks for both math and reading. When schools did not meet these benchmarks, they were subject to sanctions outlined by the federal law, such as restructuring of schools (*Federal Flash: Dec. 3: Key Differences Between Every Student Succeeds Act and NCLB - YouTube*, 2015). Through ESSA, the federal government requires each state to track student achievement and growth data and holds school districts accountable for their performance. It also eliminated prescribed interventions previously mandated by the U.S. Department of Education (Every Student Succeeds Act (ESSA) Overview | NASSP, 2020) and provides states the autonomy to intervene when students are not meeting the academic performance standards.

With ESSA, all states could remove the authoritarian policies and unintended consequences of NCLB, such as overemphasizing standardized testing as the sole benchmark and only using scientifically-based research methods as a prescriptive approach in teaching (Schul,

2011), and state leaders were empowered to design how schools account for student achievement. In response, Pennsylvania implemented an ESSA Consolidated State Plan and the Future Ready PA Index, "a comprehensive public-facing school progress report that increases transparency around school and student performance" ("Targeted Support and Improvement," 2020). The PA Future Ready Index "includes a range of assessments, on-track, and readiness indicators, to more accurately report student learning, growth, and success in the classroom and beyond" ("Future Ready PA Index: School Fast Facts," 2018). Specifically for grades 5 and 6 (upper elementary school), data are obtained from the PSSA for English Language Arts and Mathematics in the areas of student proficiency and the academic growth expectations, school attendance, and percentage of students obtaining the career standards benchmark (Information on Indicators and Measures, n.d.). While developing the state plan, the Pennsylvania Department of Education (PDE) committed to identifying not only students who receive a proficient or advanced score on a state assessment but also to examine the academic progress or growth of students, providing school districts a way to compensate for lower levels of student proficiency (Designating Schools for Targeted Support and Improvement, 2020). These calculations are developed from the Pennsylvania Value-Added Assessment System (PVAAS), which uses various algorithms to ensure the assessment aligns to academic standards, demonstrates reliability and validity, and allows for sufficient variation in performance (Every Student Succeeds Act Pennsylvania Consolidated State Plan, 2019).

2.1.2 MTSS Structure

MTSS focuses on providing instruction that matches students' needs, adjusting based on student performance, and using data to decide intervention intensity and duration (Prasse et al.,

2012). While the MTSS framework does not specify an intervention program or workshop that must be completed, students are provided interventions at varying instructional levels through a three-tiered system (Figure 1). The tiers are "defined in terms of intensity (time and focus) of instruction" (Weisenburgh-Snyder et al., 2015). In each tier, ongoing student assessment data are collected to support informed instructional decisions.

Figure 1. MTSS Tiered Graphic (Sedita, 2016)

Tier 1 consists of primary interventions for all students delivered through core instruction. "Within Tier 1 of the MTSS structure, early intervention and identification allow for appropriate differentiated instruction to be implemented for most students to be successful" (Gamm et al., 2012). In this tier, staff review universal screening data to identify student learning needs and provide differentiated instruction to all students. Through targeted high quality instruction within the general education curriculum, the typical aim is for 80 percent or more of students to respond

to this level of instruction (IlluminateEducation, 2022). "The goal at Tier 1, therefore, is to structure classrooms for academic and behavioral success and in so doing prevent many common learning and behavior problems" (Hunter et al., 2015).

In Tier 2, students who do not demonstrate appropriate progress within Tier 1 and need specific academic support will receive an additional 30 minutes of focused instruction from an interventionist on the cross-disciplinary teams of general and special education personnel three to five days a week. In Tier 2, a more targeted intervention approach compared to Tier 1 is utilized within a small group setting to remediate skill deficits for approximately 15 percent of the overall students. If a student is need of a more intensive and individualized intervention than Tier 2, the student is placed into Tier 3. A Tier 3 intervention focuses on individualized goals guided by progress monitoring data for approximately 5 percent of students. In Tier 3, intervention occurs for 60 minutes through a designated intervention time every day and may require students to be removed from their general education classes due to the time-intensive high-quality instructional strategies needed to make adequate progress. Tier 3 is more frequent and intensive, and it also allows for goals that may not be on grade level (IRISCenter, 2021).

According to PDE, schools need to create cross-disciplinary teams consisting of both general and special education personnel to "use a problem-solving process to integrate evidence-based academic, behavioral and social-emotional practices matched to student needs…" (*PaTTAN - Multi-Tiered System of Supports*, 2018). By using such practices to yield positive outcomes within the Multi-Tiered System of Supports (MTSS), schools will be "intervening with an array of academic, behavioral and social-emotional issues while promoting schoolwide systems change" (Lane et al., 2013).

Under Pennsylvania's Consolidated Plan, MTSS will provide the framework for literacy interventions to address these academic barriers.

"MTSS practices include:

- Delivery of standards-based instruction and differentiated learning opportunities to meet the needs of all students;
- Aggregation and analysis of multiple data points to support informed decisions regarding curriculum, instruction, and assessment; and
- Implementation of a tiered system of support to differentiate programmatic interventions for all students" (*Every Student Succeeds Act Pennsylvania Consolidated State Plan*, 2019).

2.2 Implementing the MTSS Framework with Fidelity

2.2.1 MTSS Implementation

To provide a multi-tiered system to students, districts and schools must intentionally develop an infrastructure that allows for intervention, data processing, and collaboration opportunities. School leaders must allocate time and resources to support and foster such development. Teachers need substantial support in using collected data to identify students' academic performance levels and determine how core instruction should be adjusted to meet the identified student needs (Prasse et al., 2012).

Once the student data are collected through a standardized universal screening assessment, such as the NWEA MAP Growth assessment, teachers will identify individual students who may be at risk for poor learning outcomes and discuss them as school-based teams to identify appropriate intervention levels and plans to support each individual. Then the three-tiered system of MTSS for academics will be implemented. The most crucial element to successful implementation throughout each tier is the "high-quality performance data, which essentially functions as the engine driving the entire system" (Weisenburgh-Snyder et al., 2015).

Even though all students begin in Tier 1 through the general education curriculum, all tiers must remain fluid. During Tier 2 and 3 interventions, specific student data are consistently monitored, and, once students reach the desired standard, they are removed and put into a less intensive intervention tier. For example, if a Tier 3 intervention group student is making appropriate progress, they can move from Tier 3 to Tier 2. For this reason, the Tier 2 or 3 interventionist needs to collect and progress monitor student data continuously as these shifts in tiers could occur at different times for different students (Dombek, Foorman, Garcia, & Smith, 2016). However, it is important to note that research evidence has shown that tier 1 core instruction in isolation had limited effects for struggling readers. Although there were some positive gains for reading comprehension, and vocabulary, an infusion of other instructional practices was needed (Swanson et al., 2017).

2.2.2 Universal Screening and Progress Monitoring

Universal screening and progress monitoring are essential in MTSS. Universal screening is usually the first step of the process and administered at least three times per year to identify students who may be at risk for not meeting the intended learning targets. The NWEA MAP

Growth assessment is an example of a universal screener used to measure student achievement and growth by providing teachers with data to effectively differentiate instruction for students (*NWEA Home*, 2021).

Progress monitoring involves a more routine and consistent assessment to collect and monitor student growth data for teachers to analyze regarding the effectiveness of the intervention. Gathering data on how students perform on targeted grade-level standards helps educators make informed decisions (Thurlow et al., 2020). Educators can then use the data to make informed decisions and differentiate instruction accordingly.

2.2.3 MTSS Implementation Challenges

While research continues to show that the three-tiered framework of MTSS does not differ among school districts by providing a consistent framework focused on the foundation of students receiving core instruction and increasing intensity levels of interventions, data may not always be reliable because there are few clear guidelines. For instance, schools are left to the discretion of their local education agency (LEA) to determine the universal screening assessment administered to all students. Second, schools are left to establish score values on these assessments to determine the entry levels of the tiered intervention because there is no national monitoring institution (*Tiered Systems of Support: Practical Considerations for School District*, 2017). Although the MTSS framework appears to have norms established, discrepancies still emerge regarding specifics among each tier, including allotted time, duration, group size, and frequency of progress monitoring (Harlacher et al., 2014). For instance, some have described Tier 2 and Tier 3 as occurring daily (Harlacher et al., 2014).

Another challenge when implementing a new structure in a school system is teacher perception. As with all new initiatives requiring a change in teachers' instructional practices, teacher attitudes and beliefs about the need for change must coincide. As MTSS implementation continues in the school district, teachers must recognize the importance and believe the change will have a positive impact on student performance. Teacher perception is often overlooked, even though the MTSS structure provides a significant shift in providing services to struggling students (Rowe et al., 2014). Teachers are expected to use progress monitoring tools to monitor student growth; "however, such measurement tools are not necessarily emphasized in preservice teacher education program" (Rowe et al., 2014).

2.3 Evidence-Based Professional Development

2.3.1 Logistics

"The success of a multi-tiered framework begins with establishing school-wide, high-quality general classroom instruction via professional development in evidence-based instructional procedures and classroom support from instructional leaders" (Swanson et al., 2017). As a vital part of every educational institution, teachers must understand the importance of continuous learning and planning to increase the quality of education they provide to their students. However, research demonstrates conflicting views on the relationship between educator attitudes and how change occurs. Some find evidence that a change in beliefs must precede a shift in practice, while others find that a change in practice precedes a change in beliefs (Sailor et al., 2021). Though one answer is not better than another, it is important to find a balance to provide evidence to support a

change while continuing to listen to teacher perspective and needs. In one study, almost two-thirds of teachers reported needing support in using student data to make decisions and determine whether core instruction needed to be adjusted or if supplemental support needed to be added (Prasse et al., 2012). While professional development is multifaceted, it can be broadly understood as an opportunity to increase and acquire new knowledge and skills, which leads to growth and development (Karacabey, 2020).

In 2003, the National Staff Development Council recommended that districts devote 10 percent of school budgets to professional development (Kelleher, 2003). With such a small portion of the total expenditures in a school's budget, school systems need to closely monitor the effectiveness of the curriculum and interventions to measure the impact on student achievement. Educators need opportunities to review their current curriculum, identify what all students must know and be able to do at the end of the course, and provide vehicles for students to access their own learning and knowledge. According to Cook and Odom (as cited in (Mahoney, 2020), improved outcomes result from the intervention and its effective implementation. Through professional development focused on the MTSS framework and support through collaborative conversations, teachers must learn to use individualized data to provide small group instruction to target specific skills and assess student learning.

2.3.2 Framework

The professional development framework should be a rotation to meet teachers' motivations and include follow-up through coaching, mentoring, and observations (Hoover & Soltero-González, 2018). In addition, professional development needs to be designed as a learning opportunity for teachers to increase their effectiveness. Teacher workshops and conferences where

no support or feedback is provided afterward are inadequate because they do not allow teachers the opportunity to develop new skills (Kelleher, 2003). While professional development opportunities usually occur outside of the classroom, instructional coaching helps bridge the gap between training and implementation (Freeman et al., 2017). Teachers are often left to seek additional resources and time to apply their learning to their classroom practices. Instead, the school administration must provide consistent opportunities for growth and support for the teachers (Karacabey, 2020).

Hoover and Soltero-Gonzalez (2018) identified key features for effective professional development. With an emphasis on facilitating higher-order thinking through intellectual conversations and interactive delivery for collaboration, teachers can have increased control over their learning (Hoover & Soltero-González, 2018). Time needs to be dedicated for teachers' self-reflection and group sharing of experiences and expertise. The research also showed the importance of using relevant topics and practical tasks for teachers to apply the professional development concepts in their classrooms and receive support and coaching from one another and school administration (Hoover & Soltero-González, 2018). School administration must ensure that general and special education teachers receive the proper resources, training, and support to address student needs with the MTSS framework (Freeman et al., 2017). This training and support, in turn, creates an environment in which students become the responsibility of *all* teachers, not just content-specific teachers (Hollingsworth, 2019). All staff, not only those impacted by their students' scores on state assessments, then play a role in the child's development.

2.4 Conclusion

While, historically, federal educational laws held states responsible for ensuring school accountability for student achievement, in the past few years these laws have shifted to provide states and school districts with more flexibility. With the passage of NCLB in 2002, states were responsible for holding schools accountable through a rigid framework and universal approach. However, not all schools successfully met such arbitrary learning targets set forth by government officials. The formalized reactive response and approach to low student performance data created by NCLB demonstrated minimal gains desired by the policy.

In 2015, ESSA was passed. While it held states to similar principles focused on testing, teacher quality, and addressing low-performing schools, it provided states more autonomy and flexibility in creating innovative approaches to meet their needs in the hopes of maximizing student achievement. Now, school systems are empowered to develop their own systematic strategies to address individual student needs and implement instructional opportunities and interventions to support students. As a result, school systems need to identify specific areas of concern for individual students that negatively impact their academics, behavior, and social-emotional learning. With limited budgets, schools need to be intentional in their implementation evidence-based interventions and identify areas of improvement to make carefully calculated research-based decisions to ensure the success of *all* students.

In response to ESSA, Pennsylvania adopted the MTSS structure through its consolidated plan, which empowers school districts to target their support with a three-tiered approach to providing such interventions for struggling students and those performing below grade-level proficiency. In response, districts must train teachers to become interventionists and implement the MTSS structure within their current frameworks. While the primary goal of MTSS is to

improve student achievement, schools are also providing these interventions early so students may perform at the expected proficiency levels on state assessments on which school districts are evaluated and compared to their regional and state peers. To achieve these goals, teachers need to learn new skill sets that include administering universal screening assessments, disaggregating student data, and monitoring student progress through the MTSS cyclical structure.

First, a universal screening assessment is administered to all students, after which schools categorize students into three tiers. In the Tier 1 structure, all students receive instruction through the general education curriculum with the goal of at least 80 percent of students responding positively. Of the students who do not meet the desired threshold, the intervention team, consisting of general and special education teachers, will implement either Tier 2 or Tier 3 support determined by student need. Throughout the entire intervention process, student data will be collected and interpreted to monitor individual progression, which will allow for fluid movement among tiers.

While some districts and states have identified barriers to proper implementation of MTSS, the state of Pennsylvania that recommended LEAs and schools develop, submit, and implement an MTSS plan. However, with the flexibility of ESSA, each plan may differ based on the student population and resources available. The framework does emphasize the importance of creating cross-disciplinary intervention teams of general education and special education teachers to create a collaborative problem-solving approach to meet the learning needs of individual students; therefore, all teachers should be considered an integral part of the team. As highlighted in the PaSLP, the ongoing professional learning opportunities must enable teachers to "understand how to use these systems as a mean of enhancing assessment and instructional efforts…that will result in improved literacy outcomes for all students" (Wolf et al., 2019). Therefore, school districts,

must provide ongoing professional development opportunities for teachers through focused and effective professional development.

Professional development must be targeted and ongoing to help teachers transition to this structure. Planning and preparation for these professional development opportunities must be tailored towards adult learners by emphasizing higher-order thinking, collaboration, and practicality for implementation with an overarching focus on continuous support. By creating these learning opportunities, school districts can emphasize the importance of the teachers' practice, and how they can continue to seek and utilize best practices to support student achievement.

3.0 Theory of Improvement and Implementation

3.1 Theory of Improvement

Improvement science is a problem-solving approach that allows educators to develop and test theories by collecting and analyzing data through a series of small cycles. Each cycle works towards a specified aim or desired outcome. The driver diagram is a visual representation tool used to further map out what contributes to the aim and might lead to improvement (Perry et al., 2020).

The proposed aim for this study was for 80 percent of teachers to understand the Multi-Tiered System of Support (MTSS) framework and be able to interpret the universal screener data to inform instructional decisions for Tier 1 students. While the school historically is on track to meet the long-term state requirement, the data show a decline in the percentage of students scoring within the proficient range. Teachers and school officials have recognized there is still a population of students who were not meeting the desired performance goal and therefore look to MTSS as a framework to guide interventions. Tier 1 is the largest tier and supports all students in the classroom to meet core instructional goals. "Although the tier includes general instruction, it also refers to differentiation of core instruction to address diverse student classroom needs" (Gamm et al., 2012). To achieve this desired performance, teachers must first develop the skills to access and interpret student data to become MTSS interventionists through this new framework. Therefore, professional development is needed. The driver diagram explains the change idea developed to help reach this outcome (Figure 2).

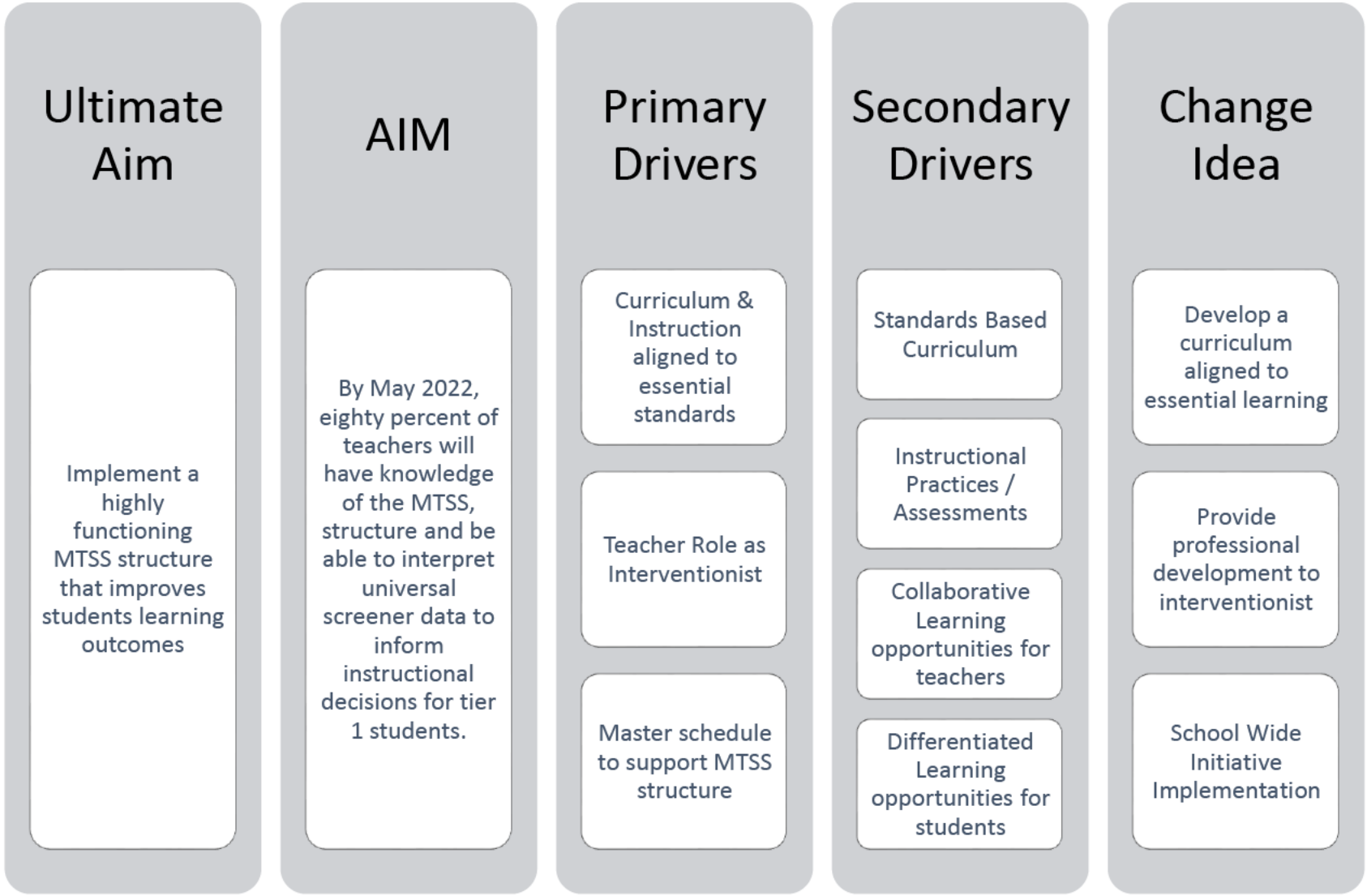


Figure 2. Driver Diagram

As interventionists, teachers must acquire new knowledge and skillsets to access, use, and monitor student data through the universal screening and progress monitoring tools in order to make instructional decisions within the classroom. As classroom-based teachers are tasked with facilitating differentiated instruction by integrating evidence-based supports matched with students' needs through the MTSS framework, school leaders must allocate time and resources to support their professional growth development (Prasse et al., 2012). In the current MTSS framework, classroom-based teachers are required to become interventionists who complete a comprehensive analysis of student learning through achievement data to identify individualized learning needs. Then they are tasked with designing interventions while progress monitoring the effectiveness of the intervention to ensure each student is making appropriate progress toward individual learning targets. Although MTSS provides the framework to use data to guide a teacher's instruction to benefit all students within the classroom, teachers do not understand how to access and interpret the data needed to inform them of the supports for students who are struggling as they learn and develop skills or concepts. Without such knowledge, teachers may have difficulty tailoring instruction to meet the needs of individual students through the MTSS framework. Therefore, the theory of improvement was intended to provide teachers with training on MTSS, and how to access and interpret data from the district's selected universal screener, NWEA MAP Growth. This professional development, in turn, became the prerequisite needed to inform instructional decisions when planning for Tier 1 interventions for all students. Teachers needed to first develop the skills to interpret data and then learn to plan lessons which differentiates evidence-based instruction to accelerate the academic performance of all students (Gamm et al., 2012).

3.2 Research Questions and Inquiry Intervention

This study was an evaluation of professional development designed to enhance teachers' knowledge. The study focused on the usefulness of the professional development, the level of understanding of the MTSS framework, and the ability to access and interpret the NWEA MAP Growth Assessment data acquired through the universal screener. Each professional development opportunity built upon the previous session as teachers progressed from learning about the overall MTSS framework to the more finite details of data collection and interpreting data from the district's universal screener, the NWEA MAP Growth Assessment.

Since this theory of improvement cycle focused on developing the background knowledge and skills needed for teachers to become Tier 1 MTSS interventionists, the following questions guided this research study:

1. To what extent are teachers able to identify the essential components of the MTSS framework?
2. To what extent can teachers access data from the NWEA MAP Growth assessment?
3. To what extent can teachers interpret the data from the NWEA MAP Growth assessment to utilize when instructionally planning for tier 1 interventions?

With a focus on developing teacher knowledge and skill, each teacher participated in a four-part series of 30-minute interactive professional development sessions (Table 5) during both staff and professional learning community (PLC) meeting times. At the conclusion of each session, teachers were asked to complete a short survey to assess their level of knowledge and an exit ticket to assess the format and structure of the professional development module.

Table 5. Professional Development Plan (Spring 2022)

Module Topic	Objective	Activity	Resource(s)
Module 1- MTSS	•Identify the essential components of the three-tiered MTSS framework	Interactive Presentation •Reflection •Group Discussion	•PowerPoint •Survey 1- MTSS Overview •Exit Ticket
Module 2- NWEA MAP Growth as the Universal Screener	•Develop an understanding of the NWEA MAP Growth assessment •Access class level reports to gain insight from the collected data	Interactive Presentation •Videos •Role-Play •Exploration	•PowerPoint •Teacher Laptops •Videos: ○"MAP Introduction" video from the NWEA website ○"Key Reports for Teachers 1" ○"Key Reports for Teachers 2" •MAP Reports Summary Sheet from NWEA Website •Survey 2: NWEA MAP Growth Assessment and Reports •Exit Ticket
Module 3- Understanding the Class Report	•Utilize the class report to interpret current class needs •Identify the number of students who scored in each performance percentile range •Identify goals areas for each class	Interactive Presentation •Videos •Guided-Exploration •Group Discussion	•PowerPoint •Teacher Laptops •Access to NWEA website •Videos: ○"Class Reports" ○"Key Reports for Teachers (3) •District Designed Class Report Reflection Sheet •Survey 3: NWEA MAP Growth: Understanding the Class Report •Exit Ticket
Module 4- Understanding the Learning Continuum Report	•Utilize the class breakdown report to identify student instructional needs •Utilize student data to identify learning statements based on standards	Interactive Presentation •Video •Guided Exploration	•PowerPoint •Teacher Laptops •Access to NWEA website •Video: ○Class Breakdown Reports Video •"How Do I Plan for Instruction" Handout •Survey 4: NWEA MAP Growth: Accessing and Understanding the Class Breakdown Report & Learning Continuum •Exit Ticket

The first module was an interactive PowerPoint (Appendix A) presentation adapted from several other district presentations; it focused on the essential components of the three-tiered

MTSS framework. The presenter opened the training by asking all teachers to think about a student who struggled academically in their classroom and, through a series of question, to reflect on what data were considered and what differentiated learning strategies were implemented to support this student. The presenter then took teachers through an overview of the cyclical progression of identifying students who are at risk of not meeting end-of-year learning targets through the universal screener, creating tiered intervention groups based on student needs, and progress monitoring. As teachers progressed through the module, they began to explore sample data and shared their understanding with one another. At the end of the module, all teachers were asked to complete their first survey to assess their level of learning on the MTSS structure and overview. The second module focused on developing the teachers' knowledge of the NWEA MAP Growth assessment, the district's universal screener. In that module, the participants developed an understanding of the universal screener and the various NWEA MAP Growth assessment class level reports available once testing has been completed. The MAP Growth assessment is an online adaptive achievement assessment in the NWEA suite that measures student achievement and growth related to academic standards in math and reading for each grade level. As students progress through the assessment, test items automatically adjust in difficulty depending on whether the previous answer was correct or incorrect. Overall student performance is measured on the MAP Growth assessment using a RIT (Rasch Unit) to assess and compare academic achievement and growth. More specifically, the RIT score directly aligns to learning statements in each state standard to support teacher planning individualized for where students are ready to learn (NWEA, n.d.). Once the testing is completed, teachers have access to student data through various NWEA reports to help identify student needs and adapt instruction accordingly. There are three levels of reports, Student-level, Class-level, and School-level reports, to assist teachers when viewing

student results, monitoring growth, planning instruction, grouping students, and communicating with students and families (*Reports | NWEA*, 2022).

In Module 2, the presenter guided teachers through videos, role playing opportunities to collaborate and practice skills through simulated situations, and data exploration (Appendix C). Teachers first watched a short three-minute MAP introduction video and participated in a role-playing activity to further their understanding of the NWEA MAP Assessment. In this role-playing activity, teams of three or four teachers were asked to imitate a parent conversation pertaining to an explanation of the NWEA MAP Assessments in which the teacher answered prompted questions. The third and fourth member of the group summarized the entire conversation. Next, teachers watched two additional video clips on MAP reports and were asked to access the secure website and briefly explore the class-level reports through guiding questions. At the end of the module, all teachers were asked to complete their second survey to assess their level of learning on the NWEA MAP Growth Assessment and available reports. The third module focused specifically on developing the teachers' knowledge of accessing the class report and how to use this report when interpreting current class needs on the NWEA secure online portal. This report compares the class's overall performance data to the national normative data from NWEA. Teachers learned how to compare goal areas and identify student needs as they begin to plan for instructional support (NWEA, 2022b).

In this third module, after a short introductory video on the class report, teachers were asked to individually log into their NWEA MAP account to delve into a class report for one of their classes (Appendix E). Once a report had been generated, teachers independently reviewed the data provided and responded to a series of questions that guided them through the exploration of the class report (Appendix F). Teachers were then asked to share their reflections on how they

might use this data to drive their instructional practices within the classroom in a small group and then again as a large collective group. At the end of the module, all teachers were asked to complete their third survey to assess their level of learning on the NWEA MAP Growth Assessment Class Report. The fourth and final module focused on accessing the class breakdown report and how to use this report to identify students' deficit skills for instructional grouping. In this module, teachers focused on navigating the data to identify goal areas and learning statements by students' individual RIT scores. By navigating the class breakdown report, a teacher can transition from the broad goal areas to the learning statements of each instructional standard. These learning statements describe the skills needed in each standard (NWEA, 2022a).

In this fourth module, teachers watched a short interactive e-learning video with action prompts created by NWEA (Appendix H). The video tutorial started by introducing both the Class Breakdown Report and the Learning Continuum. It then progressed into a more interactive format. As the facilitator played the video tutorial, there were built-in pauses to allow teachers the opportunity to apply the skills on their own. For example, after the tutorial demonstrated how to create a class breakdown report, it paused to allow teachers the opportunity to do it on their own. To help ease in toggling back and forth between both the recorded video and the teacher's live data, the facilitator projected the video on a large screen allowing teachers to strictly focus on their data using their personal devices. A MAP Growth handout was also provided to teachers to guide them through accessing MAP Growth data, using the Learning Continuum to identify RIT bands, and identifying learning statements needed when adjusting instructional plans (Appendix I). Teachers were also asked to reference the district's curriculum and approved essential standards to help explore the learning continuum data related to standards in the first part of the video's four-step process. At the end of the module, all teachers were asked to complete their fourth survey to

assess their level of learning on the NWEA MAP Growth Assessment Class Breakdown Report and Learning Continuum.

3.3 Methods and Measures

The measures of the intervention include knowledge of the MTSS structure, ability to access the data provided through the universal screener, and ability to interpret the data to drive instructional decisions when planning for tier 1 interventions.

3.3.1 Local Context

The study was conducted at a middle school located in a Western Pennsylvania public school district that, like many others, has made a commitment to provide additional and targeted academic support to those struggling in reading and math content areas. Through these efforts, teachers were asked to voluntarily participate in a series of surveys following each of the professional development opportunities to assess their own knowledge and the professional development structure.

3.3.2 Participants

The professional development sessions were required for all teachers in both fifth and sixth grade. However, only teachers who voluntarily agreed to participate in the study completed an anonymous survey and exit ticket after each training module. The selected group of teachers

considered for this study consisted of 32 fifth and sixth grade teachers, 24 who teach general education and eight who teach special education. Broken down by grade level, participants included 12 general education and four special education fifth grade teachers and 12 general education and four special education sixth grade teachers (Table 6).

Table 6. Participants

Teacher Type	Grade Level	Number of Teachers
General Education	Fifth Grade	12
	Sixth Grade	12
Special Education	Fifth Grade	4
	Sixth Grade	4

3.3.3 Surveys and Exit Tickets

To maintain anonymity, at the conclusion of each module, teachers were asked to voluntarily complete the corresponding survey evaluating the knowledge gained. Each survey consisted of eight questions (Appendices B, D, G, J). One question pertained to previous knowledge, and the other seven questions related to the knowledge gained as a result of the professional development. Once the surveys were completed, the data were analyzed to measure the effectiveness of professional development when planning to implement MTSS. Table 7 depicts the four-module surveys by research question. All results were collected anonymously through an online password-protected survey system, Qualtrics. No identifiable personal information was collected, therefore creating a low risk for breach of confidentiality. The study design is seen in Table 8.

Teachers were also asked to complete an exit ticket at the conclusion of each professional development module (Appendices B, D, G, J). The exit ticket served to measure teacher perception

of and satisfaction with the structure and implementation of the professional development. Teachers were asked a series of questions using a Likert scale to rate the structure, format, and activities of each professional development session. The analysis consisted of descriptive statistics provided through the Qualtrics survey system.

Table 7. Module Question Exit Survey Depiction

Research Question	Data Collection	Sources
To what extent are participants able to identify the essential components of the three-tiered MTSS framework?	Module 1 Exit Survey Questions 1,2,3,4,5,6,7,8 Module 2 Exit Survey Questions 2,3,4	(*Every Student Succeeds Act Pennsylvania Consolidated State Plan,* 2019) (Prasse et al., 2012)
To what extent can participants access data from the NWEA MAP Growth assessment?	Module 2 Exit Survey Questions 1,5,6,7,8 Module 3 Exit Survey Questions 1,2,3 Module 4 Exit Survey Questions 1,2,3,4	(Weisenburgh-Snyder et al., 2015) (Thurlow et al., 2020)
To what extent can participants interpret the data from the NWEA MAP Growth assessment to utilize when instructionally planning for tier 1 interventions?	Module 3 Exit Survey Questions 4,5,6,7,8 Module 4 Exit Survey Questions 5,6,7,8	(Dombek, J. L., Foorman, B. R., Garcia, M., & Smith, 2016) (Gamm et al., 2012)

Table 8. Study Design (Spring 2022)

Method	Construct(s) Assessed / Type of Measure
Individual Survey 1	•Knowledge of MTSS structure •Professional Development Format and Structure
Individual Survey 2	•Knowledge of how to access data from the NWEA MAP Data •Knowledge of MTSS structure •Knowledge of the NWEA MAP Growth assessment structure and format •Professional Development Format and Structure
Individual Survey 3	•Knowledge of how to access the Class Report on the NWEA website •Knowledge of how to interpret data from the NWEA MAP Growth assessment •Professional Development Format and Structure
Individual Survey 4	•Knowledge of how to access the Class Breakdown Report on the NWEA website •Knowledge of how to interpret data from the NWEA MAP Growth assessment •Professional Development Format and Structure

4.0 Analysis

This study used a problem-solving approach to determine the effectiveness in improving teachers' understanding of Pennsylvania's Multi-Tiered Systems of Support (MTSS). MTSS "is a standards-aligned comprehensive school improvement framework" (PDE, 2022a) focused on meeting the needs of all students. This study focused on the evaluation of a professional development series designed to increase fifth and sixth-grade middle school teachers' knowledge of the MTSS framework and the skills necessary to access and interpret data from the universal screener, the NWEA MAP Growth assessment, for instructional improvement.

The intervention consisted of a four-part series of interactive professional development opportunities. The first module focused on the essential components of MTSS as a three-tiered framework and the progression of identifying students at risk of not meeting specific learning targets through the universal screener, creating intervention groups, and progress monitoring. In the second module, participants focused on developing an understanding of the NWEA MAP Growth assessment. During this module, participants focused on developing their understanding of the universal screener as an online adaptive achievement assessment and how to access the data related to academic standards in both math and reading for each grade level. The third module allowed participants to develop a deeper understanding of the Class Report generated from the NWEA MAP Growth assessment. Participants were asked to interpret and reflect on their own class data. Finally, the fourth module had participants interpret the data generated from the Class Breakdown Report and Learning Continuum.

After each of the four professional development modules, the participants were asked to complete a survey to determine teachers' perceptions of their previous knowledge and evaluate the

knowledge they gained. Each survey contained questions measuring both the teachers' perception and knowledge gained as a result of the professional development. Each question was analyzed to address one of the three research questions, listed below. At the end of each professional development, teachers were also asked to complete an exit ticket to measure their perception and satisfaction with the professional development's structure.

The research questions that guided this study were:

1. To what extent are teachers able to identify the essential components of the MTSS framework?
2. To what extent can teachers access data from the NWEA MAP Growth assessment?
3. To what extent can teachers interpret the data from the NWEA MAP Growth assessment to utilize when planning for Tier 1 instruction and interventions?

4.1 Participant Demographics

The professional development was offered to 32 fifth- and sixth-grade teachers from a middle school in Western Pennsylvania (Table 9). Of the 32 teachers, 24 (75%) teach general education, and eight (25%) teach special education. Broken down by grade level, participants included 12 (37.5%) general education and four (12.5%) special education fifth-grade teachers and 12 (37.5%) general education and four (12.5%) special education sixth-grade teachers. However, it is important to note that the sample size fluctuated throughout the study based on teacher attendance for each professional development session.

Table 9. Invited Participants

Teacher Type	Grade Level	Number of Teachers
General Education	Fifth Grade	12
	Sixth Grade	12
Special Education	Fifth Grade	4
	Sixth Grade	4

The professional development opportunities were presented during the school day and were only available to teachers who were present. The number of participants varied for each of the modules based on teacher attendance at school. The table below shows the number of participants who attended and completed the survey and exit ticket after each session (Table 10). There was a change in study participation due to teacher attendance at school on each of the professional development session days.

Table 10. Study Participation Data (n=32)

Professional Development Module	Number of Attendees and completed surveys	Number of Completed Exit Tickets
Module 1: MTSS	31 (96.9%)	30 (93.4%)
Module 2: NWEA MAP Growth as the Universal Screener	26 (81.3%)	26 (81.3%)
Module 3: Understanding the Class Report	27 (84.4%)	27 (84.4%)
Module 4: Understanding the Learning Continuum Report	22 (68.8%)	22 (68.8%)

4.2 Data Collection

4.2.1 Teachers Are Able to Identify the Essential Components of the MTSS Framework

Research question one was designed with the instructional focus of all teachers being able to identify the essential components of the three-tiered MTSS framework, which was the focus of the first professional development session. Developing foundational knowledge provides an opportunity for teachers to understand the larger context of MTSS, the critical components, and how the framework supports students to meet instructional goals. The first professional development module started by asking participants to imagine a struggling student in their classroom and reflect on what skills and tools they have utilized to support this particular student. The session then transitioned into a review of the MTSS framework while participants were asked to continue to reflect on the aforementioned student and how this process would support the student's needs. In the end, there were also several opportunities to share their learning and collaborate with colleagues about the next steps.

4.2.1.1 Module 1

The first question in the Module 1 survey focused on the teachers' perceived prior knowledge of the MTSS framework using a Likert scale. Of the 31 participants, a majority (~74%) of participants rated their prior knowledge as somewhat to moderately familiar (Table 11).

Table 11. Teachers' Perception of Their Prior Knowledge of MTSS

Question	Module	Not at all Familiar (Number of teachers)	Slightly familiar (Number of teachers)	Somewhat familiar (Number of teachers)	Moderately familiar (Number of teachers)	Extremely familiar (Number of teachers)
How familiar were you with the MTSS structure prior to this professional development?	1	0.0%	19.4% (6)	29.0% (9)	45.2% (14)	6.5% (2)

As the questions in the Module 1 survey progressed, questions two through eight measured the participants' knowledge after the professional development (Table 12). Responses to the survey questions indicate that most teachers obtained the knowledge to identify the essential components of the MTSS structure. Four of the questions from Module 1 yielded 30 (96.8%) of 31 correct responses. In question 2, participants defined MTSS as a comprehensive school improvement framework focused on supporting struggling students. Question 3 had participants identify the three tiers within the MTSS framework. Question 6 in Module 1 asked participants to identify students for tiered intervention using the universal screening percentile ranges, and question 8 had participants recognize eligible interventionists. The other three questions from the Module 1 survey pertained specifically to the three tiers in the MTSS framework and yielded 25 (80.7%) of 31 correct responses. For question 4, 25 (80.7%) teachers appropriately identified that 80 percent of students should respond to Tier 1 instruction. Then for questions 5 and 6, again 25 (80.7%) teachers were able to the key components of what Tier 1 and Tier 2 should look like. Overall, the survey data supported that teachers were able not only to properly identify MTSS as a three-tiered structure but could recognize each tier by the different student levels of need, time, and intensity. On average, approximately 90 percent of teachers answered the questions correctly

compared to the 74 percent who felt they were at least somewhat proficient prior to the professional development session.

Table 12. Results for Research Question 1 from Module 1 Survey

Question	Module	Module Survey Question	Percentage of Teachers who Answered Correctly	Number of Teachers who Answered Correctly
What is MTSS?	1	2	96.8%	30
How many tiers are in the Multi-Tiered System of Support?	1	3	96.8%	30
What percentage of students should respond to Tier 1 instruction?	1	4	80.7%	25
What does Tier 1 intervention look like?	1	5	80.7%	25
When using the universal screener data, what percentile range do students need to score within to be eligible to participate in a Tier 2 or Tier 3 intervention?	1	6	96.8%	30
Which tier consists of 30 minutes of intervention 3-5 days per week?	1	7	80.7%	25
Please select all who are eligible to serve as interventionists.	1	8	96.8%	30

4.2.2 Teachers Can Access Data from the NWEA MAP Growth Assessment

The second research question concentrated primarily on building teachers' capacity to access class-level reports produced from the NWEA MAP Growth assessment, the universal screener. To help teachers develop a better foundation to implement the MTSS structure in their schools, components of the next three professional development modules focused on developing a knowledge of the NWEA MAP Growth assessment as the universal screener and accessing the data to make data-informed decisions in identifying Tier 1, Tier 2, and Tier 3 for students in need of an intervention. The second professional development module was intended to develop an in-depth understanding of the NWEA MAP Growth assessment and how to access the reports. Then Modules 3 and 4 focused on two specific class level reports. Interpreting the Class Report was the primary focus of Module 3 and interpreting the Class Breakdown and Learning Continuum report was the focus of Module 4.

To help understand teachers' prior knowledge, three perception questions were asked in order to allow participants to rate their perceived familiarity with both the NWEA MAP Growth reports, Class Report, and the Class Breakdown Report before the professional development (Table 13). According to the data, in the second module, of the 26 teachers, 13 (50.0%) felt extremely familiar or moderately familiar, 10 (38.5%) felt somewhat familiar, and three (11.6%) felt slightly familiar or not at all familiar with the NWEA MAP Growth Assessment that the district has chosen as the universal screener in the MTSS framework. In the third module, 18 (66.6%) of the 27 participants felt extremely or moderately familiar, eight (29.6%) felt somewhat familiar, and one (3.7%) felt slightly or not at all familiar with the Class Report. When teachers were asked about their perceived familiarity with the Class Breakdown Report in the fourth module, only eight (36.4%) of the 22 participants felt extremely or moderately familiar, seven (31.8%) felt somewhat

familiar, and seven (31.8%) felt slightly or not at all familiar with the report. However, while participants reported not being familiar with the report before the professional development, a majority were able to answer knowledge-based questions after professional development.

Table 13. Teacher Perception of Their Prior Knowledge of the Instructional Content Data

Question	Module	Not at all Familiar (Number of teachers)	Slightly familiar (Number of teachers)	Somewhat familiar (Number of teachers)	Moderately familiar (Number of teachers)	Extremely familiar (Number of teachers)
How familiar were you with the NWEA MAP Growth reports prior to this professional development?	2	3.9% (1)	7.7% (2)	38.5% (10)	30.8% (8)	19.2% (5)
How familiar were you with the Class Report prior to this professional development?	3	3.7% (1)	0.0%	29.6% (8)	44.4% (12)	22.2% (6)
How familiar were you with the Class Breakdown Report prior to this professional development?	4	9.1% (2)	22.7% (5)	31.8% (7)	31.8% (7)	4.6% (1)

The remaining questions on each module's survey assess respondent knowledge after participating in the sessions. The survey results from questions from Modules 2, 3, and 4 indicate that most participants developed an understanding of the NWEA MAP Growth assessment and acquired the knowledge to access data from the NWEA MAP Growth assessment (Table 14).

4.2.2.1 Module 2

Module 2 focused on the NWEA MAP Growth assessment; therefore, seven questions in the survey addressed the second research question, and 26 participants completed the survey

(Table 14). In response to question 3, 23 (88.5%) were able to recognize how the MAP assessment can help teachers. Questions 4 and 5 indicated that all 26 (100%) teachers identified students taking the MAP Growth assessment three times per year and the proper steps to access class reports. Then, participants were asked in question 7 about the proper steps in creating a class report, which resulted in 21 (80.8%) answering correctly. Twenty-four (92.3%) teachers were also able to identify the reports que as where reports were stored in question 8.

However, according to the survey results, more than 50% of respondents were not able to differentiate between the different types of assessments (adaptive, formative, and standardized) and were not able to correctly identify the class report as the report that provides teachers with student performance data for a selected term, including norms to analyze current class needs. Only 12 (46.2%) correctly identified NWEA as a computer adaptive test in question 2, and 11 (42.3%) correctly identified the class report in question 6.

Table 14. Module 2, Survey Results for Research Question 2 on accessing data from the NWEA MAP Growth assessment

Question	Module Question	Survey	Percentage of Teachers Who Answered Correctly	Number of Teachers Who Answered Correctly
The NWEA MAP Growth assessment is a:	2		46.2%	12
MAP assessment helps teachers to:	3		88.5%	23
How many times a year does a student take the MAP Growth assessment?	4		100%	26
How do you access class reports?	5		100%	26

Table 14 continued

Which report provides teachers with student performance for a selected term including norms to analyze current class needs?	6	42.3%	11
What are the proper steps to creating a report?	7	80.8%	21
Once a report is created, where is it stored?	8	92.3%	24

4.2.2.2 Module 3

While Module 3 focused on understanding the Class Report, some overlap from Module 2 on accessing the data from the NWEA MAP Growth assessment was reviewed. Thus, on the Module 3 survey, two questions pertained to accessing data from the NWEA Map Growth assessment (Table 15). Of the 27 participating teachers, 26 (96.3%) were able to identify the key uses of the class report in question 2, and 27 (100%) were able to identify the key data the class report provides in question 3.

Table 15. Module 3, Survey Results for Research Question 2 on accessing data from the NWEA MAP Growth assessment

Question	Module Question	Survey	Percentage of Teachers who Answered Correctly	Number of Teachers who Answered Correctly
The Class Report:	2		96.3%	26
The Class Report provides:	3		100%	27

4.2.2.3 Module 4

The Module 4 survey also contained two questions about participants' knowledge and ability to access data from the NWEA MAP Growth assessment, specifically the Class Breakdown Report (Table 16). Of the 22 participants in the Module 4 survey, 18 (81.8%) of participants could identify the purpose of the Class Breakdown by Goal report. The results also showed that in question 3, 21 (95.5%) of the participants were able to identify the purpose of generating the learning continuum.

Table 16. Module 4, Survey Results for Research Question 2 on accessing data from the NWEA MAP Growth assessment

Question	Module Survey Question	Percentage of Teachers Who Answered Correctly	Number of Teachers Who Answered Correctly
The Class Breakdown by Goal report	2	81.8%	18
Within the Class Breakdown report, a learning continuum report can be generated to _	3	95.5%	21

4.2.3 Teachers Can Interpret the Data from the NWEA MAP Growth Assessment to Utilize When Planning for Tier 1 Instruction and Interventions

First, teachers must understand how to access the student data and various reports through the online platform. Next, teachers need to interpret the data to plan and prepare for instruction and intervention, the focus of the third research question. Components in the professional

development Modules 3 and 4 focused on teachers utilizing and interpreting their class-generated data from the NWEA MAP Growth assessment. Module 3 focused specifically on the Class Report, and then Module 4 focused on the Class Breakdown and Learning Continuum report. In Module 3, once a Class Report was generated, participants were asked to complete a reflection sheet to identify goal areas and discuss how they could use this data moving forward. Then in Module 4, participants worked in collaboration to use the Class Breakdown Report and Learning Continuum to identify learning statements in each RIT score band of the essential standards. Based on the survey results, participants acquired the knowledge and skills to interpret the data provided in the class level reports.

4.2.3.1 Module 3

In the Module 3 survey, five questions asked teachers to interpret student-generated data from different parts of the Class Report (Table 17). Overall, participants were not only able to identify overarching instructional areas where students need additional support but were also able to identify individual student needs. Two questions resulted in 27 (100%) of 27 teachers answering correctly; question 6 asked teachers to identify the instructional area where a student scored the lowest, and question 8 asked teachers to identify how many students might qualify for Tier 2 or 3 interventions. Responses to question 7 resulted in 26 (96.3%) teachers correctly identifying a student's percentile rank. Questions 4 and 5 focused on participants interpreting the instructional area by RIT range; 23 (85.2%) and 25 (92.6%) were able to identify the instructional areas where students were in need of support and enrichment.

Table 17. Module 3 Survey Results for Research Question 3 focused on interpreting the data from the NWEA MAP Growth Assessment

Question	Module Survey Questions	Percentage of Teachers who Answered Correctly	Number of Teachers who Answered Correctly
Which instructional area has the largest number of students in need of support?	4	85.2%	23
Which instructional area has the largest number of students in need of enrichment?	5	92.6%	25
This student scored the lowest in which instructional area?	6	100%	27
What percentile rank did this student score?	7	96.3%	26
Based on the chart above, how many students would qualify for Tier 2 or Tier 3 interventions?	8	100%	27

4.2.3.2 Module 4

The Module 4 survey also contained five questions on interpreting data from the Class Breakdown and Learning Continuum Report (Table 18). The results of question 4 showed that 21 (95.5%) participants were able to identify the first step in how to use the learning continuum when planning for instruction. In the next question, 22 (100%) of participants accurately grouped students by RIT score band.

While a majority of participants answered questions correctly in the Module 4 survey, the results, on average, were lower than those in the previous surveys. The proposed aim for this study was for 80 percent of teachers to understand the MTSS framework and be able to interpret the universal screener data. The next three questions produced lower than average results, which did not meet the desired threshold. Questions 6 and 8 focused on using learning statements, and only 14 (63.6%) understood the learning statements as items the students are ready to be taught in a standard and the appropriate next step if the learning statements were not provided in the report. For question 7, only 16 (72.7%) were able to interpret data when there are no learning statements provided.

Table 18. Module 4 Survey Results for Research Question 3 focused on interpreting the data from the NWEA MAP Growth Assessment

Question	Module Survey Questions	Percentage of Teachers Who Answered Correctly	Number of Teachers Who Answered Correctly
When planning for instruction using the Class Breakdown and Learning Continuum Goal, a teacher must first ___.	4	95.5%	21
In this chart, students are group by _____.	5	100%	22
Referencing the chart above, the highlighted learning statements listed for Jennifer and Jenna within the learning continuum are:	6	63.6%	14
What does the red X mean when there are no learning statements below the	7	72.7%	16

Table 18 continued

standard within a certain RIT score range?			
What would be an appropriate next step when a student falls within the RIT range identified by the red X where no learning statements are found?	8	63.6%	14

4.2.4 Exit Ticket Results

After each module, an exit ticket survey was collected to get participant feedback from the 32 invited participants on the usefulness of the professional development. The exit tickets were designed to gather feedback as an assessment of the professional development structure through participant reflection. This feedback was gathered to help prepare for future training and professional development opportunities. The exit ticket included a series of statements using a 5-point Likert Scale: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree. The first five statements in each exit ticket were similar and focused on content, engagement, and presentation (Table 19). The last statement in each module was specific to a planned activity to increase engagement (Table 20).

The first professional development module focused on the MTSS framework and provided an opportunity for self-reflection. Thirty of the 32 invited participants completed the exit ticket for a response rate of (93.8%), which is different from the 31 who attended and completed the professional development survey. Module 2 focused on teachers developing an understanding of the NWEA MAP Growth assessment and learning how to access class-level reports. During the

session, each participant was asked to log onto the NWEA website and access the class level reports. After the session, 26 participants completed the exit ticket for a response rate of (81.3%). The third professional development module focused on interpreting the class report generated using the NWEA MAP Growth assessment data. In this module, participants accessed student data, generated a report, and answered reflection questions based on their student-generated data. Twenty-seven participants completed the exit ticket for a response rate of (84.4%). The fourth and final module had only 22 (68.8%) participants from the 32 invited participants. In this module, teachers were asked to access their students' NWEA MAP Growth Data and begin to identify standards where differentiation must occur to ensure students meet the end-of-year learning targets/goals.

It is important to note that, although the response rate fluctuated between modules, only in Module One did the response rate differ from the participation rate. There was an attrition, or loss, of participants between each session, with the fourth module having the lowest participation rate.

The first two questions in each module focused on the practicality of the content presented in each of the professional development sessions. The first question specifically focused on whether participants felt the content was sufficient in developing their understanding of the MTSS framework. The second focused on whether participants felt the content of the professional development was beneficial to their role as a teacher/interventionist. Based on the results, over half the participants agreed or strongly agreed with the practicality of the content being presented.

The next two questions of the exit tickets focused on the format of each of the modules by asking participants questions about engagement and duration. Question 3 specifically focused on the engagement of the training; in all four modules, over 50 percent either agreed or strongly agreed the training was engaging. However, in Modules 1, 2, and 4, on average 23 percent neither

agreed nor disagreed and 37 percent neither agreed nor disagreed that the training was engaging. For question 4, while most participants noted that the training included ample time for reflection and questions in all four modules, in both Modules 2 and 4 a significant number of approximately 10 participants also disagreed or strongly disagreed.

The fifth question on the exit ticket concentrated on participants' perception of the mix of presentation and activities. Again, a majority of participants agreed or strongly agreed that the professional development was suitable for their learning style. However, in Modules 1, 2, and 4, between 10 and 25 percent of participants also reported that the professional development was not suitable for their learning style.

Table 19. Exit Ticket Summary Results focused on content, engagement, and presentation

Question	Module	Strongly Disagree/Disagree (Number of participants)	Neither Agree nor Disagree (Number of participants)	Agree/Strongly Agree (Number of participants)
The content presented was sufficient in developing my understanding of the MTSS framework	1	0.0%	13.3% (4)	86.7.0% (26)
	2	11.5% (3)	23.1% (6)	65.4% (17)
	3	3.7% (1)	29.6% (8)	66.7% (18)
	4	18.2% (4)	27.3% (6)	54.5% (12)
The training was beneficial to my role as a teacher/interventionist.	1	3.3% (1)	13.3% (4)	83.3% (25)
	2	11.5% (3)	19.2% (5)	69.2% (18)
	3	3.7% (1)	22.2% (6)	74.1% (20)
	4	13.6% (3)	27.3% (6)	59.1% (13)
The training was engaging.	1	0.0%	20.0% (6)	80.0% (24)
	2	7.7% (2)	23.1% (6)	69.2% (18)
	3	3.7% (1)	37.0% (10)	59.3% (16)
	4	9.1% (2)	27.3% (6)	63.6% (14)
The training included ample time for reflection and questions.	1	3.3% (1)	30.0% (9)	66.7% (20)
	2	23.1% (6)	11.5% (3)	65.4% (17)
	3	7.4% (2)	40.7% (11)	51.9% (14)
	4	27.3% (6)	18.2% (4)	54.5% (12)
	1	10.0% (3)	36.67% (11)	53.3% (16)

Table 19 continued

The mix of presentation	2	11.5% (3)	23.1% (6)	65.4% (17)
and activities was suitable	3	3.7% (1)	22.2% (6)	74.1% (20)
to my learning style.	4	22.7% (5)	13.6% (3)	63.6% (14)

The last question in each module was designed to allow participants to provide a reflection in response to a specific activity used during the professional development module designed to increase participant engagement. Since each module had different activities, the last question in each exit ticket was unique (Table 20).

In the first module, the last question focused specifically on the helpfulness of the self-reflection scenarios opportunities, and 21 (70%) of the 30 participants agreed or strongly agreed the scenarios were beneficial. In the second module, 18 (69.2%) of the 26 participants felt the role-playing activities helped to further their understanding of the NWEA MAP Growth assessment. In the third module, participants were provided the opportunity to generate their own class data from the NWEA secure online portal, and 20 (74.1%) of the 27 participants found value in the activity. In the fourth module, participants were provided an opportunity to collaborate with colleagues to further interpret the data to understand their students' needs, and 16 (72.3%) of the 22 participants found it to be beneficial.

Table 20. Question 6 from the Exit Tickets

Question	Module	Strongly Disagree/Disagree (Number of participants)	Neither agree nor disagree (Number of participants)	Agree/Strongly Agree (Number of participants)
The self-reflective scenario helped frame my learning for the day.	1	3.3% (1)	26.7% (8)	70% (21)
The role-playing and exploration questions were helpful in facilitating my understanding of the NWEA MAP Growth Assessments.	2	7.7% (2)	23.1% (6)	69.2% (18)
I found value in the opportunity to generate my own class data from the NWEA secure online portal.	3	3.7% (1)	22.2% (6)	74.1% (20)
The collaboration time was helpful in furthering my understanding of my students' needs.	4	13.6% (3)	13.6% (3)	72.3% (16)

4.3 Interpretation of Results

Based on the findings from the professional development surveys, the overall data supported that teacher knowledge was gained throughout each of the professional development sessions, evidenced by the comparison of the participants' prior knowledge to the knowledge acquired after the professional development session. Teachers were able to identify the key factors in the MTSS framework and obtain data from the NWEA MAP Growth assessment. Participant knowledge was also gained in interpreting the data from the NWEA MAP Growth assessment, but

the survey results showed further development is needed. To implement MTSS with fidelity, continued development in implementing a Tier 1 structure in the MTSS framework is evident. Discussions of the results, recommendations, and next steps are addressed in the next chapter.

5.0 Conclusions and Recommendations

This chapter provides a summary of the key findings relevant to the problem of practice, including a discussion of the findings and recommendations for the next steps to fully implement the Multi-Tiered System of Support (MTSS) framework.

5.1 Summary of Key Findings

MTSS is a tiered framework designed to promote the success of all students by using valid and reliable data to enhance students' academic, behavioral, and social-emotional outcomes adopted in Pennsylvania as part of a system of support to improve student achievement (*PaTTAN - Multi-Tiered System of Supports*, 2018). To implement the MTSS framework properly, instructional leaders must establish high-quality professional development focused on evidence-based instructional procedures (Swanson et al., 2017). As adult learners, professional development must integrate opportunities for active learning that can be applied to their classroom practices and build upon their prior knowledge.

Therefore, the purpose of this study was to evaluate a progressive series of professional development modules for both general and special education fifth- and sixth-grade teachers to increase their knowledge of the MTSS framework and the skills necessary to access and interpret data in order to make informed decisions when planning for intervention in core instruction. Each professional development was designed as a learning opportunity for teachers to increase their

effectiveness through purposeful utilization of data in the classroom to inform instructional decisions in Tier 1.

5.1.1 Conclusion 1: Teacher Development is Evident

Through the development of knowledge acquired as a result of the professional development modules, the survey revealed that teachers possess the knowledge to identify MTSS as a proactive framework to support student achievement by using data collected from the universal screener and progress monitoring tools. According to the Pennsylvania Department of Education (PDE), schools must not only identify students who receive proficient or advanced scores on state assessments but also examine student growth aligned to academic standards (*Every Student Succeeds Act Pennsylvania Consolidated State Plan*, 2019). MTSS then provides that structure to offer interventions that monitor student growth. Survey results showed that over 80 percent of teachers developed foundational knowledge and were able to understand the guiding principles of MTSS, the essential components, and their role as interventionists.

Teachers have also begun to develop a knowledge base of the NWEA MAP Growth structure and the benefits of using the data to inform instructional decisions, as evidenced by the data collected in the Module 2 survey. By giving the assessment three times a year, teachers can monitor a student's achievement level and academic growth over time through a stable scaled performance score. However, further development is needed to fully understand NWEA MAP Growth assessments as a computer adaptive test, meaning that every student gets a unique set of questions based on their previous responses.

Finally, teachers have also developed and acquired the skills needed to navigate the NWEA website. Once each testing session is completed by the students, the next step for teachers is

accessing the student data to interpret, set goals, and support student growth. The data collected from Modules 2, 3 and 4 suggest that teachers can properly navigate the NWEA website to both create and access class reports. From the data, over 80 percent of teachers could identify the proper steps to creating and accessing reports. These reports provide teachers the ability to see data such as performance scores, national percentiles, and instructional focus areas.

5.1.2 Conclusion 2: Further Professional Development is Needed

The data collected from each module's survey affirms that teachers have developed sufficient knowledge and understanding not only to access student data from the universal screener but begin to interpret it. Based on the feedback, teachers could generate class reports; however, the data does not demonstrate that staff have the understanding necessary to apply their findings to adjust classroom instruction. Teachers scored significantly lower on questions about the learning continuum data in Module 4, which focuses primarily on where students are ready to learn within the reading curriculum. On average, only 67 percent of teachers could interpret data specific to student learning statements. As the research suggests, teachers will still need continued support in determining how core instruction should be adjusted to meet the identified student needs (Prasse et al., 2012). Without proper training and support, successful implementation of tiered instruction will not occur.

5.1.3 Conclusion 3: Professional Development Must be Engaging and Delivered in Short but Ongoing Increments

As research suggests, effective professional development includes time for collaboration, intellectual conversations, and practical tasks for teachers to apply the concepts in their classrooms (Hoover & Soltero-González, 2018). Although each module was only 30 minutes, each one contained these key aspects and was designed specifically to contain collaborative learning opportunities. Based on the findings from the exit tickets, teachers found value in the professional development, with approximately 70 percent of teachers agreeing that the content was sufficient in developing their understanding of the MTSS framework. Although professional development often occurs outside of the classroom, research has found that to increase teacher learning, an emphasis must be placed on facilitating higher-order thinking through collaboration and interactive delivery (Hoover & Soltero-González, 2018). Overall, teachers felt the professional developments were engaging and beneficial in their role with, again, approximately 70 percent signifying satisfaction on their exit ticket. A majority of teachers responded positively as they reflected on the usefulness, format, and structure of each professional development.

5.2 Implications

To address the slow decline in the proficiency results on the Pennsylvania System of School Assessments, a state plan was developed through the Pennsylvania Department of Education that involved implementing MTSS. Through Pennsylvania's Consolidated State Plan, MTSS must include "delivery of standards-based instruction and differentiated learning

opportunities to meet the needs of all students" by analyzing data to make informed instructional decisions through a tiered system of support for all students (*Every Student Succeeds Act Pennsylvania Consolidated State Plan*, 2019). According to the research, the success of implementing the MTSS framework starts with establishing high-quality targeted and ongoing professional development on effective practices supported by the instructional leaders (Swanson et al., 2017). Based on the data from the end-of-module surveys, findings revealed that teachers acquired an understanding of the MTSS framework. While, on average, 50 percent of teachers perceived themselves as moderately to extremely familiar with the content prior to the professional development session, over 80 percent demonstrated knowledge after each session.

However, when planning for future professional development, consideration may be needed to differentiate the learning opportunities for general and special education teachers. Historically, general education teachers have been trained to focus on the curriculum while special education teachers have received specific training focused on modifying the curriculum to meet individual student needs. Since all teachers are expected to become Tier 1 interventionists and to differentiate instruction, it would be beneficial as a next step to have more in-depth and specific training to enhance their knowledge base of the MTSS framework to collaboratively apply their learning to expand classroom practices.

Findings also indicated that successful implementation of MTSS is a complex process that involves collecting and interpreting data to make meaningful instructional decisions for students. While teachers may have established tentative plans to address all of the end-of-year academic learning standards prior to the start of the school year, it is imperative that they assess students' instructional levels to modify and adjust plans. Within the MTSS three-tiered intervention structure, data are collected from the universal screener three times per year and must be analyzed

each time. According to the PDE, schools must create cross-disciplinary teams represented at the district, school, and grade levels to use a problem-solving approach (*PaTTAN - Multi-Tiered System of Supports*, 2018). With approximately 80 percent of students in Tier 1, teachers must be equipped with the knowledge, skills, and resources to provide interventions at the core instructional level. As documented in the research, teachers will need substantial support in using data to evaluate students' academic performance and determine how core instruction should be adjusted to meet student needs (Prasse et al., 2012). While the teachers showed that they gained knowledge through the professional development, the suggested next step is that this newly acquired knowledge be applied to modify classroom lessons to support all student learning needs. Thus, the implication is to make MTSS a priority by administration working in collaboration with teachers to ensure time, resources, and delivery of core instruction are maximized (*MTSS | RTI Action Network*, n.d.).

5.3 Recommendations for Future Consideration

After considering the key findings from the surveys and exit tickets, recommendations include the following:

- Continuing to enhance the understanding of the MTSS framework through engaging professional development opportunities,
- Developing an MTSS leadership team to collaboratively plan the implementation process for MTSS now that a baseline understanding has been established, and
- Prioritizing the use of a collaborative approach when reviewing student data to make informed decisions through PLC.

According to the principles of andragogy, the practice of teaching adult learners, professional development must be relevant to teachers' lives, and learning must be problem-centered (Prather, 2015). In this study, with the slow decline in students' English Language Arts test scores, a professional expectation of PDE is to implement the MTSS framework to utilize data to inform instruction. School administrators and teachers have explored the relevance of proactively implementing the MTSS framework; however, they recognized that without proper training and a school-wide implementation plan, teachers could be left to problem-solve in isolation versus one of collaboration. While the data from the surveys suggest that knowledge was gained overall and the exit tickets suggest that participants felt that the content presented was sufficient in developing their understanding, it is important to continue building on this knowledge and to expand the repertoire of strategies to improve learning opportunities for students. The MTSS framework creates opportunities for teachers to collaborate through a problem-solving approach to expand and improve their teaching practices. Therefore, continuing to enhance their understanding of the MTSS framework through professional development is key.

The district's strategic plan has each school using MTSS as the framework to make sure every child receives the appropriate level of instruction that leads to proficiency in the grade-level learning goals. Therefore, school-based administration should work in tandem with teachers to develop an infrastructure to support the MTSS framework and an implementation plan. In the MTSS framework, teachers become the interventionists and are part of the problem-solving team; therefore, they provide input regarding the programming and instruction to enhance student learning. The school-wide team, consisting of various stakeholders, works towards developing a plan for school-wide implementation by examining such topics as school culture and current practices and beliefs. During the initial implementation, this team should "identify and address

barriers to implementation through regular teaming and problem solving," current school based student initiatives that align with MTSS, and foci for upcoming professional development based on continuous improvement (Center on Multi-Tiered System of Supports at the American Institutes for Research, 2021). By continuously collecting feedback from ongoing evaluations of interventions, this team provides opportunities to review the current structures and implementation strategies to make MTSS sustainable and ensure it is implemented with fidelity to serve the intended students.

In addition to a school-based implementation committee, opportunities for collaborative learning must be established and prioritized. A Professional Learning Community (PLC) is a team of educators working collaboratively by focusing on guiding questions that examine the skills and knowledge students need to increase achievement (DuFour et al., 2016). As teachers become Tier 1 interventionists, the work of the PLC becomes a collaborative approach to improving ELA instruction by using NWEA MAP Growth assessment data. This shared responsibility for student achievement by using student data to guide instructional decisions becomes the focus. In a collaborative PLC, teacher mindsets align so that outcomes become the responsibility of all. Student data become a tool to identify the needs of individual students and monitor progress as evidence of student learning. The NWEA MAP Growth assessment becomes the preliminary source of data used in the MTSS framework to identify student needs within the tiered intervention.

5.4 Conclusion

The purpose of this study was to evaluate a professional development series through the knowledge acquired on the MTSS framework and how to access and interpret student data

acquired through the universal screener. The findings from this research aligned with the literature for creating and implementing an MTSS framework. Through the implementation of the MTSS framework, teachers become empowered to identify and address individual student needs by setting goals using data-based decision making.

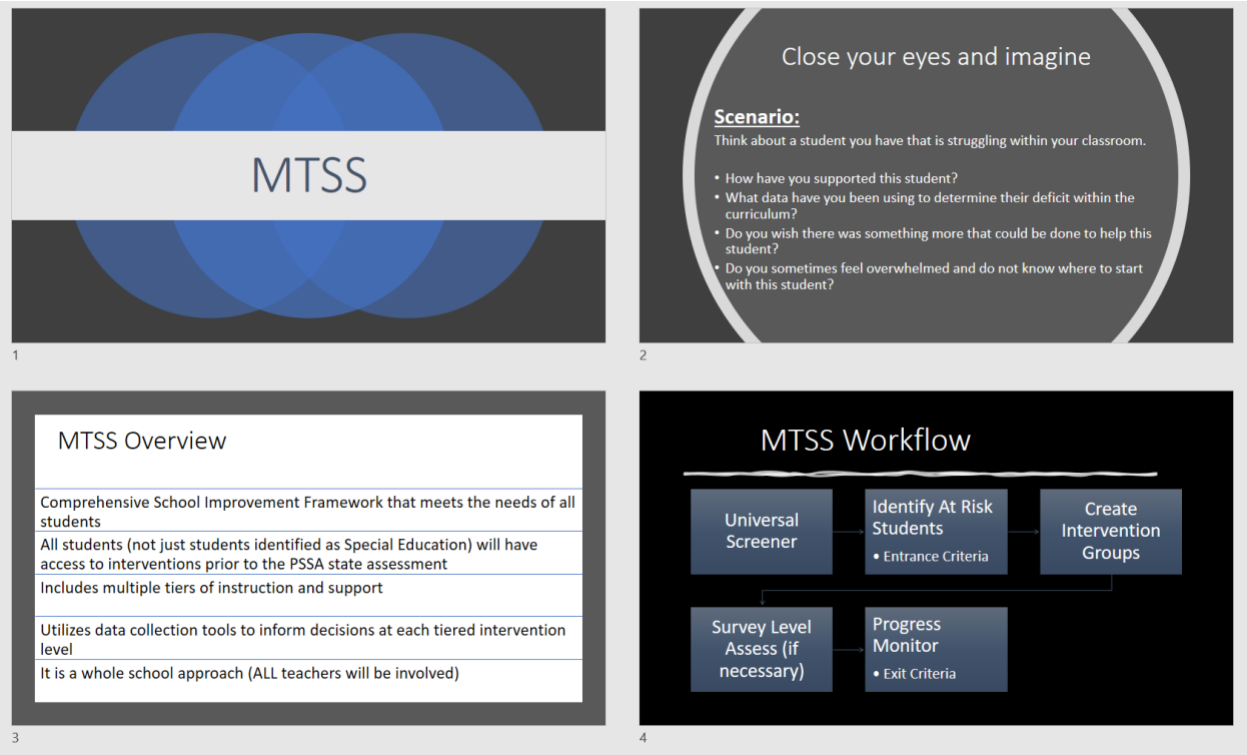
The findings indicated that teacher participants acquired knowledge and understanding of MTSS in Module 1 and how to navigate and interpret data through each of the subsequent modules. However, research indicates that teachers now need opportunities to apply their learning to use NWEA MAP Growth assessment data to adjust instructional decisions and classroom practices. By building on this foundation, teachers will be able to develop their repertoire of strategies to improve learning opportunities for students as a preventative intervention prior to state standardized tests.

To help facilitate the use of data to differentiate core instruction, an MTSS team needs to be established, consisting of various stakeholders and teachers, to work in collaboration with one another through PLCs. The school-based team's primary focus should be to identify and address obstacles that must be overcome and celebrate successes along the way. The team will focus on the big picture and collect data and feedback from stakeholder groups to review structures and implementation. The PLC will function in tandem as teams of teachers will identify the needs of students, provide interventions, and monitor progress.

Most importantly, as the school continues to address the slow decline in English Language Art test scores through implementing MTSS with fidelity, the school should continue to implement professional development. As indicated by the data from the exit survey, teachers value professional development that relates to their job, is engaging, and has a variety of activities to enhance the learning experience. Consistently providing time for coaching and collaborative

conversations that promote higher order thinking could contribute to changing instructional practices in the classroom.

Appendix A Module 1 MTSS Overview PowerPoint



Universal Screening

- NWEA – adaptive assessment
- aimswebPlus – assessment on grade level
- Universal Screening applies to ALL members of a group
  - General Education, EL, Special Education
- ALL students are eligible to participate in an intervention group and will be placed according to data.

5

What is the standard?

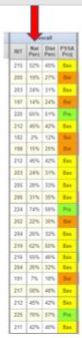
90-99	Well Above Average
75-89	Above Average
26-74	**Average *(Functional)***
11-25	Below Average *(Instructional)*
1-10	Well Below Average *(Frustration)*

- Based on Normal Curve, minimum standard is 26th percentile
- Students with a composite score in the 25th percentile or below are eligible to participate in an intervention

6

Looking at NWEA Data

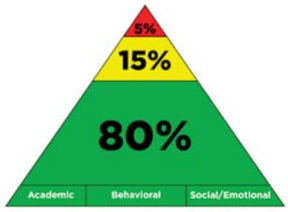
How many students would qualify for AimsWeb testing?



7

MTSS Core Team

- **Everyone** is an **Interventionist**
- Capture kids who are false negatives
- Remove kids who are false positives
- Remove kids who have met standards
- Develop intervention groups
- Monitor and maintain the fidelity of the MTSS Framework



8

Tier 3

5% of students would need this level of intervention
Students scoring between 1-10%ile on AimsWeb/NWEA
5 students or less per group
Daily for 60 minutes per day – in addition to Tier 2 intervention (additional 30 min.) or change intervention to 60 min. per day
Interventions generally provided by special educators, reading specialists or IIS beyond CARE and gen ed. Students may miss other content to have deficit skills addressed.
Assessment for progress monitoring occurs weekly and during intervention time.

9

Tier 2

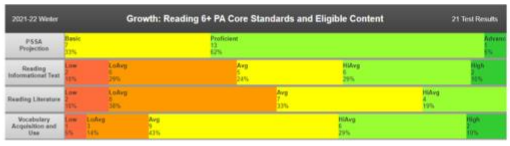
15% of students would need this intervention. If exceeding, then it should be addressed in Tier 1.
Students scoring between 11-25%ile on universal screener (AimsWeb, NWEA)
12 students or less per group
3-5 days per week, 30 minutes each day
Interventionists could be grade level teacher, reading specialist, special educator, or intervention specialist(IIS)
Most likely would occur during WIN period
Assessment for progress monitoring occurs during intervention time and biweekly.

10

Tier I

Instruction given to all students through general education and differentiated instruction (80% of students should respond to this instruction).
Determine what intervention(s)/differentiation/method of instruction needs to be incorporated into tier 1 instruction to enable the grade level to meet their goal (e.g., we are going to incorporate 10 minutes of phonemic awareness into our ELA block daily by doing ____)
Fidelity Checks: Determine a way to ensure all grade level tier 1 teachers are following the plan (peer observation with checklist, ongoing PLC discussions with documentation, support from MTSS Core Team)

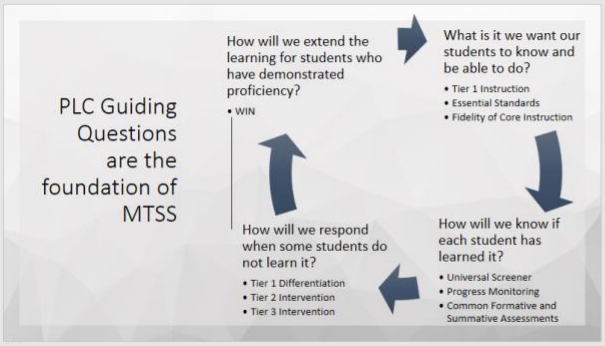
11



Turn and Talk

- **In what measure did the largest percentage of students fall in the Well Below Average + Below Average performance levels?**
- **Does this data give you a complete picture of skills you would need to address within core instruction?**

12



13

Let's Dig Deep

- **How will these skills be addressed in core instruction and in what order?**
- **How will the grade level team monitor the fidelity of the agreed upon instructional strategy to ensure high quality core instruction in the deficit skill?**

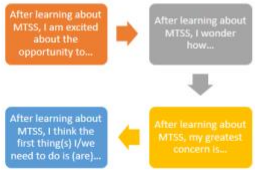
Next Steps

- **Digging Deeper into the NWEA MAP Growth Assessment and Data**

14

What new understanding did you develop as a result of today's presentation?

MTSS Sentence Starters



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INSERT QR CODE HERE

Thank you. Please take a moment to complete the short survey.

16

Appendix B Module 1 MTSS Overview Survey and Exit Ticket

Thank you so much for your willingness to participate in this short 5-minute survey at the conclusion of today's module. All results will be collected anonymously to further my doctoral study on the teacher development needed to support students in the MTSS framework. If you have any questions, please email me at [redacted].

1. How familiar were you with the MTSS structure prior to this professional development?
    a. Not at all familiar
    b. Slightly familiar
    c. Somewhat familiar
    d. Moderately familiar
    e. Extremely familiar

2. What is MTSS?
    a. A comprehensive school improvement framework focused on supporting struggling students
    b. Proficiency on the PSSA
    c. A program to support students only academically
    d. A special education program intended to identify students in need of services

3. How many tiers are in the Multi-Tiered System of Support?
    a. 2
    b. 3
    c. 4
    d. 5

4. What percentage of students should respond to tier 1 instruction?
    a. 5%
    b. 15%
    c. 80%
    d. 100%

5. What does tier 1 intervention look like?
    a. 30 minutes of intervention 3-5 days per week
    b. 60 minutes of intervention per day
    c. Differentiated instruction within the classroom
    d. One on one instruction

6. When using the universal screener data, what percentile range do students need to score within to be eligible to participate in a tier 2 or tier 3 intervention?
    a. 0-100 percentile
    b. 0-10 percentile
    c. 0-50 percentile
    d. 0-25 percentile

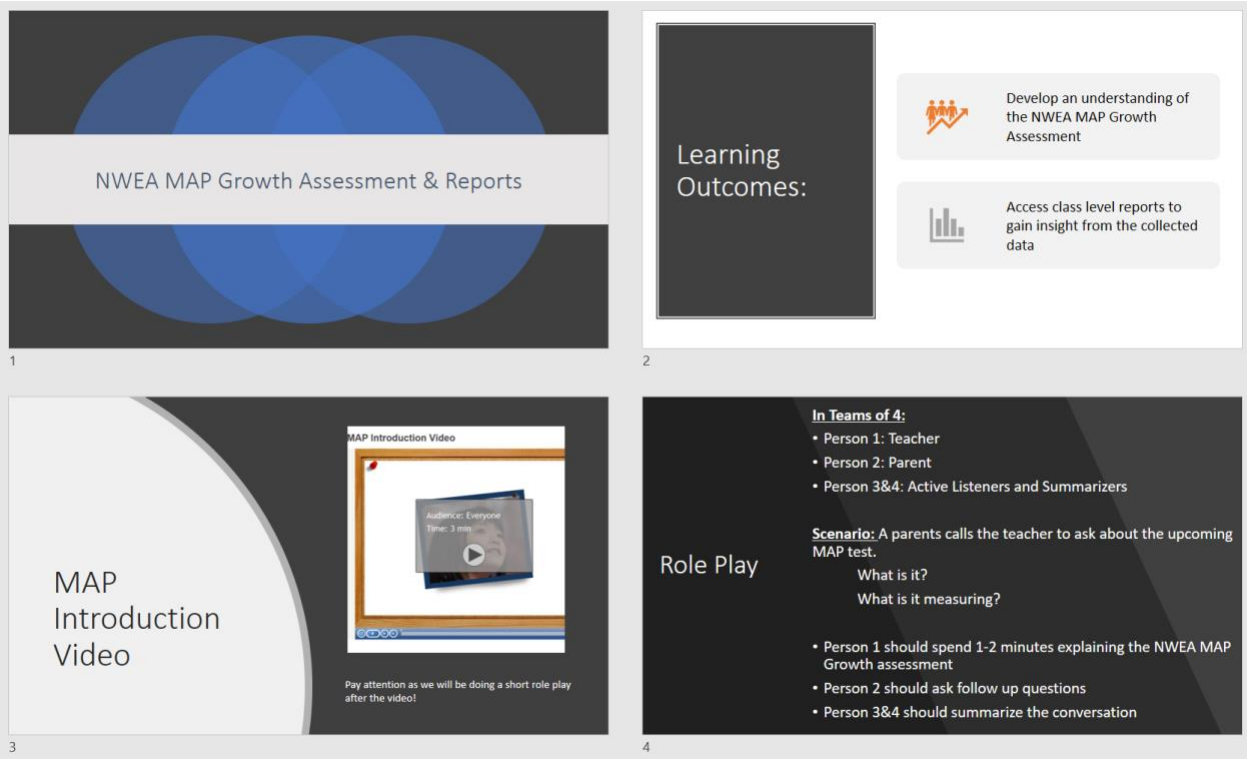
7. Which tier consists of 30 minutes of intervention 3-5 days per week?
    a. Tier 1
    b. Tier 2
    c. Tier 3
    d. Tier 4

8. Please select all who are eligible to serve as interventionists.
    a. Classroom Teachers
    b. Special Education Teachers
    c. Reading Specialists
    d. All of the above

9. Please rate the following statements using a Likert Scale

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Teacher Satisfaction •The content presented was sufficient in developing my understanding of the MTSS framework. •The training was beneficial to my role as a teacher/interventionist.					
Structure •The training was engaging. •The training included ample time for reflection and questions.					
Activities •The mix of presentation and activities was suitable to my learning style. •The self-reflective scenario helped frame my learning for the day.					

Appendix C Module 2 NWEA MAP Growth Assessment and Reports PowerPoint



Today Mike will be our NWEA guide through a series of short video. Please listen and then we will explore

Class Report

Class Breakdown Report

Student Goal Setting Worksheet

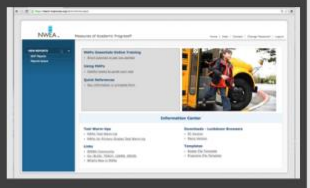
Achievement Status and Growth Report

Student Progress Report

Key Reports for Teachers (1) on Vimeo

5

Key Reports for Teachers (2) on Vimeo



6

Now it is your turn

- Log onto NWEA website
  - In Resources Tab- Click on NWEA icon
  - Type in username (school email) and password
- Click on View Reports (left hand side)
  - Click MAP Growth Reports

nwea believe in what's possible

7

Explore

- What levels of reports do you see?
- How many reports are in each level?
  - Student Level
  - Class Level
  - Skills Checklist and Screening Results
- Click on Various Reports to explore the data provided and the key uses.
- Generate at least two reports

8

Next Steps

- At the next Professional Development, we will take a deeper dive into the Class Report focusing on overall class performance and needs
- Please complete the survey

9

Appendix D Module 2 NWEA MAP Growth Assessment and Reports Exit Survey

Thank you so much for your willingness to participate in this short 5-minute survey at the conclusion of today's module. All results will be collected anonymously to further my doctoral study on the teacher development needed to support students in the MTSS framework. If you have any questions, please email me at [redacted]

1. How familiar were you with the NWEA MAP Growth reports prior to this professional development?
    a. Not at all familiar
    b. Slightly familiar
    c. Somewhat familiar
    d. Moderately familiar
    e. Extremely familiar

2. The NWEA MAP Growth assessment is a:
    a. Standardized Test
    b. Formative Assessment
    c. Summative Assessment
    d. Computer Adaptive Test

3. MAP assessment helps teachers to:
    a. Assess student needs
    b. Track student growth
    c. Prepare for the PSSA
    d. All of the above

4. How many times a year does a student take the MAP Growth assessment?
    a. One
    b. Two
    c. Three
    d. Four

5. How do you access class reports?
    a. Ask your administrator
    b. Write down all student test scores as they finish the assessment
    c. Log onto the NWEA website and select view reports
    d. Complete a google search of class reports

6. Which report provides teachers with student performance for a selected term including norms to analyze current class needs?
    a. Class Report
    b. Class Breakdown by RIT
    c. Learning Continuum
    d. Achievement Status and Growth Report

7. What are the proper steps to creating a report?
    a. Click view reports, select the report, choose report options, download from the reports queue
    b. Click on reports que, choose report options, download from the reports queue
    c. Click on manage test sessions, select the report, choose report options, download from the reports queue
    d. Click on manage test sessions, choose reports queue, download the report options

8. Once a report is created, where is it stored?
    a. Manage Test Sessions
    b. Administrator Resources
    c. Reports Queue
    d. MAP Accelerator

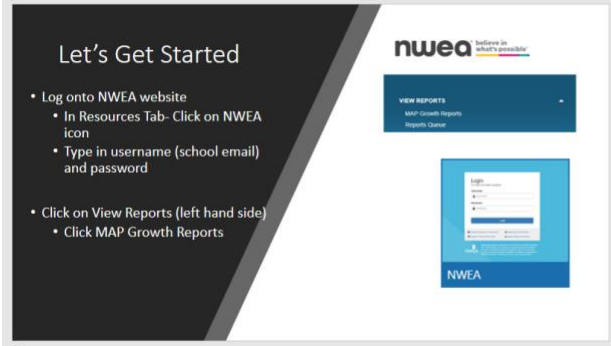
9. Please rate the following statements using a Likert Scale

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Teacher Satisfaction •The content presented was sufficient in developing my understanding of the NWEA MAP Growth data. •The training was beneficial to my role as a teacher/interventionist.					
Structure •The training was engaging. •The training included ample time for reflection and questions.					
Activities •The mix of presentation and activities was suitable to my learning style. •The role-playing and exploration questions were helpful in facilitating my understanding of the NWEA MAP Growth Assessments.					

Appendix E Module 3 NWEA MAP Growth: Understanding the Class Report PowerPoint

1

2



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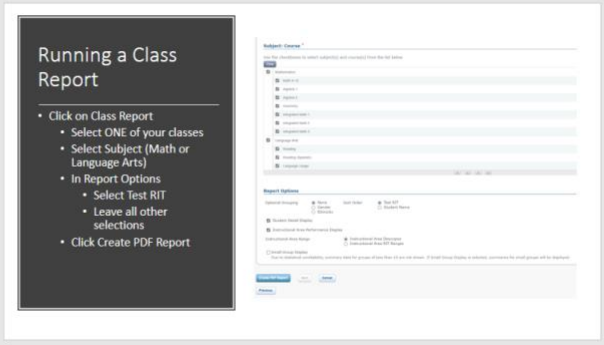

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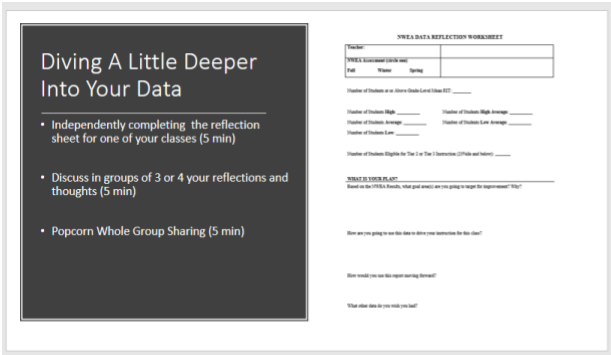

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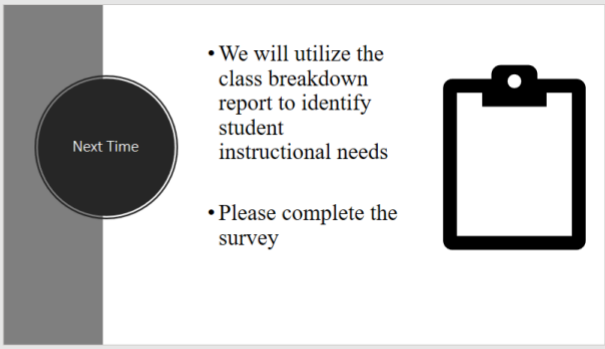

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Appendix F Module 3 Data Reflection Worksheet

NWEA DATA REFLECTION WORKSHEET

Teacher:	
NWEA Assessment (circle one) **Fall Winter Spring**	

Number of Students at or Above Grade-Level Mean RIT: _____

Number of Students **High**: _____ Number of Students **High Average**: _____

Number of Students **Average**: _____ Number of Students **Low Average**: _____

Number of Students **Low**: _____

Number of Students Eligible for Tier 2 or Tier 3 Instruction (25%ile and below): _____

WHAT IS YOUR PLAN?

Based on the NWEA Results, what goal area(s) are you going to target for improvement? Why?

How are you going to use this data to drive your instruction for this class?

How would you use this report moving forward?

What other data do you wish you had?

Appendix G Module 3 NWEA MAP Growth: Understanding the Class Report Exit Survey

Thank you so much for your willingness to participate in this short 5-minute survey at the conclusion of today's module. All results will be collected anonymously to further my doctoral study on the teacher development needed to support students in the MTSS framework. If you have any questions, please email me at [redacted]

1. How familiar were you with the Class Report prior to this professional development?
    a. Not at all familiar
    b. Slightly familiar
    c. Somewhat familiar
    d. Moderately familiar
    e. Extremely familiar

2. The Class Report
    a. Compares the class's overall performance with national normative data from NWEA
    b. Compares goal areas
    c. Helps begin the planning for instructional support
    d. All of the above

3. The Class Report provides:
    a. Overall RIT score
    b. Whole Group data
    c. The number of students who scored within each RIT range
    d. All of the above

Use the following chart for questions 4 and 5

	Lo %ile < 21		LoAvg %ile 21-40		Avg %ile 41-60		HiAvg %ile 61-80		Hi %ile > 80		Mean RIT Score (+/- Smp Err)	Median RIT	Std Dev
Overall Performance	count	%	count	%	count	%	count	%	count	%			
Growth: Reading 6+ PA 2013 Core Standards and Eligible Content / PA Assessment Anchors Core Standards Eligible Content English Language Arts: 2013	2	10%	7	33%	6	29%	5	24%	1	5%	210-**212**-214	210	8.9
Instructional Area RIT Range													
Reading Informational Text	0	0%	7	33%	8	38%	3	14%	3	14%	212-**215**-217	213	9.9
Vocabulary Acquisition and Use	2	10%	6	29%	9	43%	3	14%	1	5%	210-**212**-214	212	8.2
Reading Literature	4	19%	8	38%	5	24%	3	14%	1	5%	206-**209**-211	208	12.6

4. Which instructional area has the largest number of students in need of support?
    a. Reading Informational Text
    b. Vocabulary Acquisition and Use
    c. Reading Literature
    d. English Language Arts

5. Which instructional area has the largest number of students in need of enrichment?
    a. Reading Informational Text
    b. Vocabulary Acquisition and Use
    c. Reading Literature
    d. English Language Arts

Use the following chart for questions 6 and 7

Language Arts: Reading

Growth: Reading 2-5 PA 2013 Core Standards and Eligible Content / PA Assessment Anchors Core Standards Eligible Content English Language Arts: 2013

							Goal Performance A. Reading Informational Text B. Reading Literature C. Vocabulary Acquisition and Use		
Name (Student ID)	**Grade**	**Test Date**	**RIT Score (+/- Std Err)**	**Percentile (+/- Std Err)**	**Lexile® Range**	**Test Duration**	**A**	**B**	**C**
	5	01/05/22	205-**208**-211	40-**48**-57	745L-895L	36 m	LoAvg	Avg	Avg

6. This student scored the lowest in which instructional area?
    a. Reading Informational Text
    b. Reading Literature
    c. Vocabulary Acquisition and Use
    d. Goal Performance

7. What percentile rank did this student score?
    a. 40 percentile
    b. 48 percentile
    c. 57 percentile
    d. 36 percentile

Language Arts: Reading

Growth: Reading 2-5 PA 2013 Core Standards and Eligible Content / PA Assessment Anchors Core Standards Eligible Content English Language Arts: 2013

							Goal Performance A. Reading Informational Text B. Reading Literature C. Vocabulary Acquisition and Use		
Name (Student ID)	Grade	Test Date	RIT Score (+/- Std Err)	Percentile (+/- Std Err)	Lexile® Range	Test Duration	A	B	C
	5	01/05/22	175-**178**-182	2-**3**-4	165L-315L	50 m	Low	Low	Low
	5	01/05/22	181-**184**-188	4-**6**-9	280L-430L	67 m	Low	Low	Low
	5	01/18/22	182-**185**-188	4-**7**-10	300L-450L	29 m	Low	Low	Low
	5	01/05/22	183-**186**-189	5-**8**-11	320L-470L	43 m	Low	Low	Low
	5	01/06/22	190-**193**-196	12-**16**-22	455L-605L	35 m	LoAvg	Low	Low
	5	01/05/22	192-**195**-198	14-**20**-26	495L-645L	49 m	Low	LoAvg	LoAvg
	5	01/05/22	199-**202**-205	26-**34**-42	630L-780L	33 m	LoAvg	LoAvg	LoAvg
	5	01/05/22	199-**202**-205	26-**34**-42	630L-780L	83 m	Avg	LoAvg	Low
	5	01/05/22	201-**204**-207	31-**38**-47	665L-815L	65 m	Avg	LoAvg	LoAvg
	5	01/05/22	202-**205**-208	33-**41**-49	685L-835L	69 m	LoAvg	Avg	Avg
	5	01/06/22	202-**205**-208	33-**41**-49	685L-835L	27 m	LoAvg	Avg	Avg
	5	01/05/22	206-**209**-212	43-**51**-59	765L-915L	46 m	LoAvg	HiAvg	Avg
	5	01/05/22	211-**214**-217	55-**63**-71	860L-1010L	152 m	Avg	LoAvg	High
	5	01/05/22	211-**214**-217	55-**63**-71	860L-1010L	51 m	HiAvg	HiAvg	Avg
	5	01/05/22	211-**214**-217	55-**63**-71	860L-1010L	104 m	HiAvg	Avg	HiAvg
	5	01/05/22	212-**215**-218	58-**65**-73	880L-1030L	58 m	HiAvg	Avg	HiAvg
	5	01/05/22	213-**216**-220	59-**68**-75	900L-1050L	46 m	HiAvg	HiAvg	HiAvg
	5	01/05/22	214-**217**-220	62-**70**-77	915L-1065L	38 m	HiAvg	Avg	HiAvg
	5	01/11/22	216-**219**-222	67-**74**-80	955L-1105L	57 m	Avg	HiAvg	High
	5	01/05/22	216-**219**-222	67-**74**-80	955L-1105L	61 m	HiAvg	HiAvg	HiAvg
	5	01/05/22	216-**219**-222	67-**74**-81	955L-1105L	68 m	HiAvg	Avg	High
	5	01/07/22	219-**222**-225	74-**80**-85	1015L-1165L	119 m	High	HiAvg	High
	5	01/05/22	222-**225**-228	79-**85**-89	1070L-1220L	68 m	HiAvg	High	High

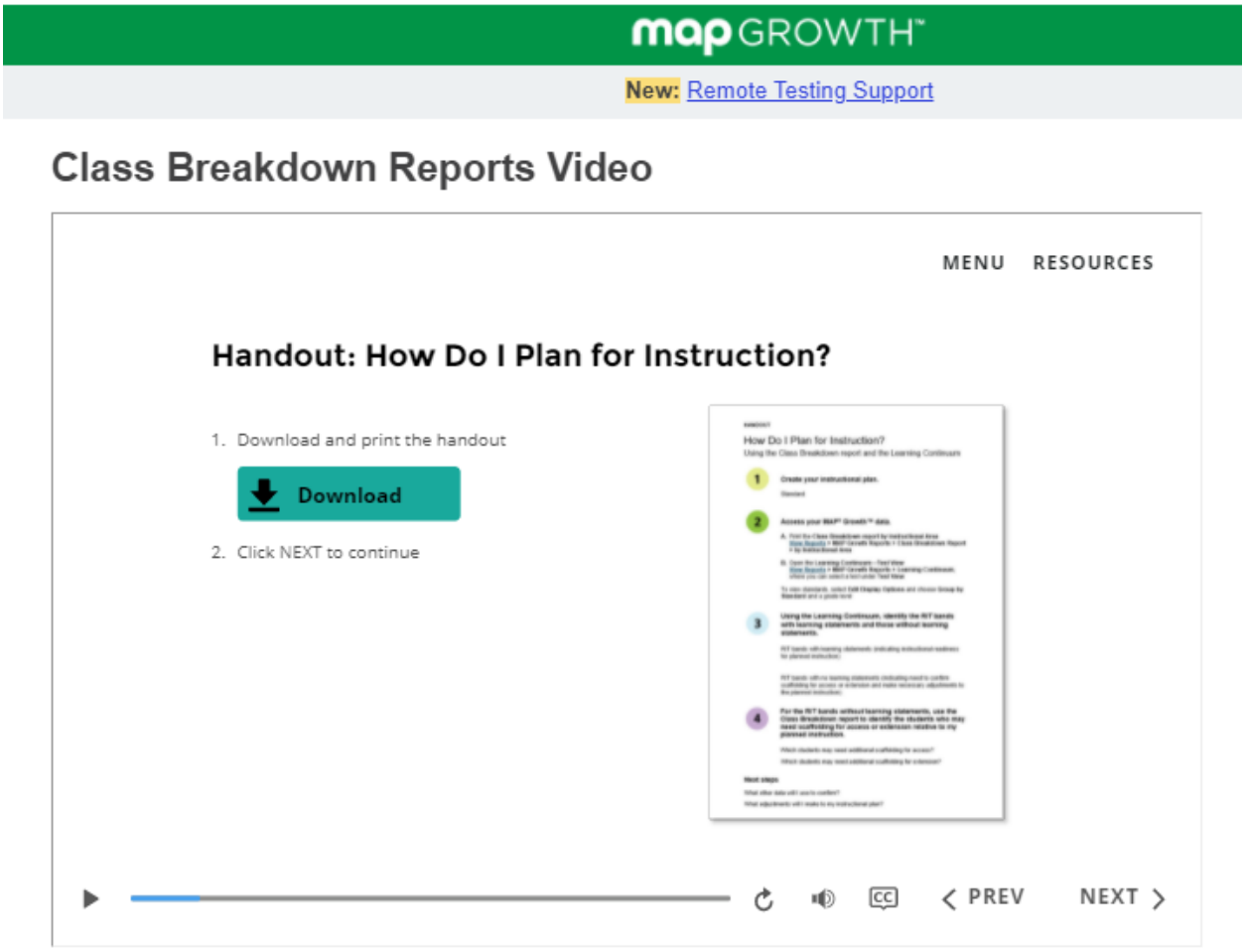
8. Based on the chart above, how many students would qualify for tier 2 or 3 interventions?
   a. 4
   b. 6
   c. 11
   d. 23

9. **Please rate the following statements using a Likert Scale**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Teacher Satisfaction •The content presented was sufficient in developing my understanding of the NWEA MAP Growth data. •The training was beneficial to my role as a teacher/interventionist.					
Structure •The training was engaging. •The training included ample time for reflection and questions.					
Activities •The mix of presentation and activities was suitable to my learning style. •I found value in the opportunity to generate my own class data from the NWEA secure online portal.					

Appendix H Module 4 NWEA MAP Growth: Accessing and Understanding the Class Breakdown Report & Learning Continuum PowerPoint

Appendix I NWEA MAP Growth Handout



Appendix J Module 4 NWEA MAP Growth: Accessing and Understanding the Class Breakdown Report & Learning Continuum Exit Survey

Thank you so much for your willingness to participate in this short 5-minute survey at the conclusion of today's module. All results will be collected anonymously to further my doctoral study on the teacher development needed to support students in the MTSS framework. If you have any questions, please email me at [redacted]

1. How familiar were you with Class Breakdown Report prior to this professional development?
    a. Not at all familiar
    b. Slightly familiar
    c. Somewhat familiar
    d. Moderately familiar
    e. Extremely familiar

2. The Class Breakdown by Goal report
    a. Provides a high-level view of student performance by subject in a class
    b. Predicts proficiency on state standards
    c. Tracks growth goals over a school year
    d. Shows individual student results

3. Within the Class Breakdown report, a learning continuum report can be generated to ___.
    a. Identify learning statements corresponding to RIT scores
    b. Plan scaffolding and differentiated instruction
    c. Align to curriculum to assessed standards
    d. All of the above

4. When planning for instruction using the Class Breakdown and Learning Continuum Goal, a teacher must first ___.
    a. Access the SAS website for standards
    b. Plan using backwards design
    c. Set student goals
    d. Identify the standard and sub standard

NWEA

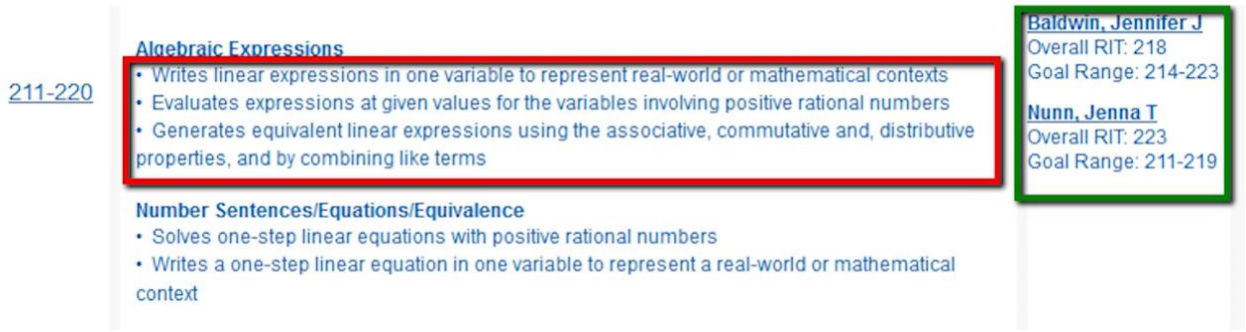
Class Breakdown by RIT Report

Newton, Mike
Mathematics 2(AB)

Term Rostered: Spring 2014-2015
Term Tested: Spring 2014-2015
District: NWEA Sample District 11 - Professional Development
School: Mt. Bachelor Middle School

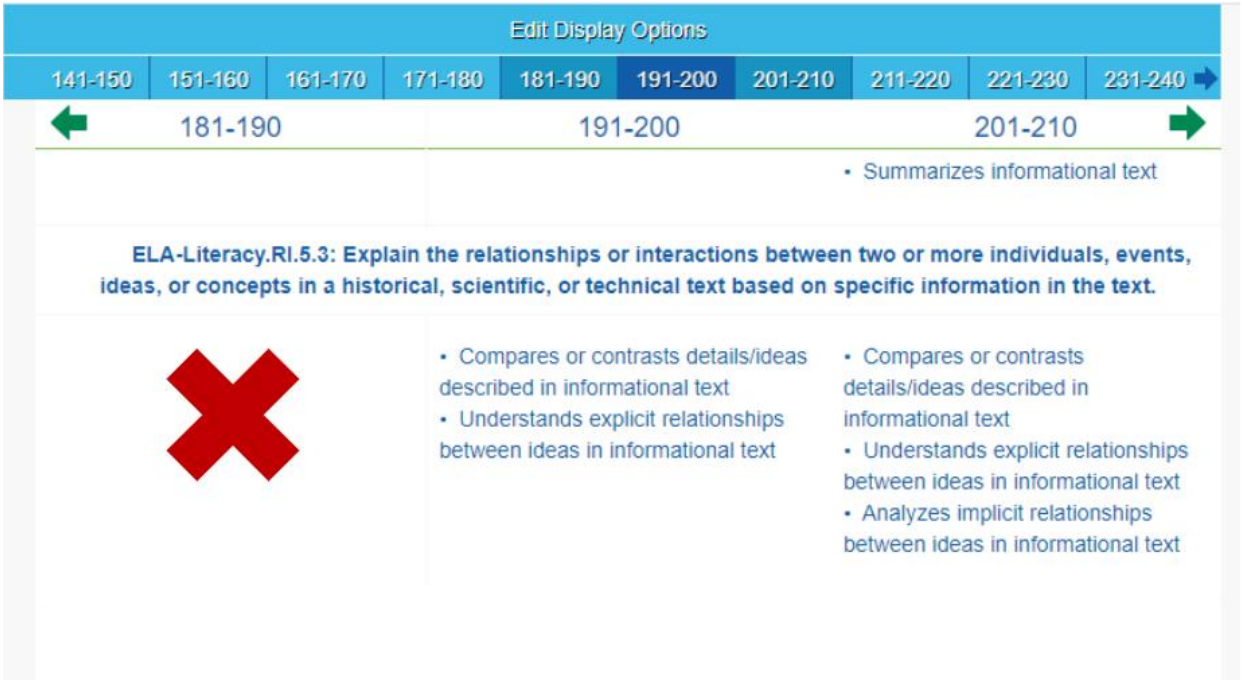
Subject	Overall Score					
	191-200	201-210	211-220	221-230	231-240	241-250
Mathematics			J.J. Baldwin (218)	J.T. Nunn (223) M.D. Ramirez (223) S.E. Wellner (228)	E.N. Restler (231) S.A. Jones (235) R.I. Laredo (238) L.E. Einhorn (240) C.E. Rottler (240)	M.T. Folkerts (241) G.H. Mobert (241) N.E. Shade (241) J.E. Ramirez (243) Z.I. Karlin (244) L.E. Mack (244) T.A. Stewart (244) A.R. Gunderson (248) M.L. Lopez (249)

5. Use the following chart for question 5. In this chart, students are grouped by ___.
    a. Subject
    b. Standard
    c. RIT score band
    d. Goal Report



6. Referencing the chart above, the highlighted learning statements listed for Jennifer and Jenna within the learning continuum are:
    a. Items the students have mastered
    b. Items the students are ready to be taught
    c. Standards they were assessed on
    d. Items to tell parents to practice

Use the following graphic for questions 7 and 8



7. What does the red X mean when there are no learning statements below the standard within a certain RIT score range?
    a. The student has mastered the standard
    b. The teacher must make their own learning statements
    c. The standard is below the student's zone of readiness
    d. The student does not need to know this standard

8. What would be an appropriate next step when a student falls within the RIT range identified by the red X where no learning statements are found?
    a. Ignore it and move on
    b. Identify additional scaffolding for access
    c. Call the parent
    d. Create extension activities for planned instruction

9. Please rate the following statements using a Likert Scale

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Teacher Satisfaction •The content present was sufficient in developing my understanding of the NWEA MAP Growth data. •The training was beneficial to my role as a teacher/interventionist.					
Structure •The training was engaging. •The training included ample time for reflection and questions.					
Activities •The mix of presentation and activities was suitable to my learning style. •The collaboration time was helpful in furthering my understanding of my students' needs.					

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