2022

A Program Evaluation Of High School Teachers' Perceptions Of Implementing Tier I Instructional Practices Of A Multi-Tiered System Of Supports

Jay Subhash Samant
William & Mary - School of Education, jayssamant@gmail.com

A PROGRAM EVALUATION OF HIGH SCHOOLTEACHERS' PERCEPTIONS OF IMPLEMENTING TIER I INSTRUCTIONAL PRACTICES OF A MULTI-TIERED SYSTEM OF SUPPORTS

A Dissertation

Presented to

The Faculty of the School of Education

The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

By

Jay Subhash Samant

November 2021

A Program Evaluation of High School Teachers' Perceptions of Implementing Tier I Instructional Practices of Multi-Tiered System of Supports

By

Jay Subhash Samant

Due date: 11/16/2021

Dr. James Stronge

Committee Member

Dr. Margaret Constantino

Committee Member

Dr. Leslie Grant

Chairperson of Doctoral Committee

Dedication

I would like to dedicate my dissertation to my parents, Jyoti and Subhash Samant. Thank you for your endless support and being my inspiration to continue my education.

Acknowledgments

I would like to thank the following people in helping me through this journey:

- My family, Mom, Dad, Manju, Gauri, and Priti for your unconditional love and support throughout this process.
- Dr. Grant, my dissertation committee chairman, for her feedback, encouragement, and expertise over the years.
- My committee members, Dr. Constantino and Dr. Stronge, who provided specific feedback, expertise, and support in helping me refine my research.
- My co-workers and school staff, for their willingness to participate in the study.

Table of Contents

List of Tables

List of Figures

Abstract

The purpose of this program evaluation was to examine teachers' perceptions of their current skills in implementing Multi-Tiered System of Supports (MTSS) interventions at one public charter school in Denver. The problem addressed in this study was the inhibiting conditions to implementing small-group instruction and Khan Academy interventions in the classroom. The findings of this study contribute to the existing literature on providing quality professional development training on MTSS programming to staff, offering ongoing instructional coaching and feedback to ensure data-driven instructional strategies, and protecting collaboration time for teachers by creating professional learning communities. This mixed methods study incorporated staff surveys and teacher interviews, which revealed staff perceiving themselves as having minimal skills in collecting different types of data and needing more substantial support in this area. Progress monitoring and formal data collection on student growth during small-group instructional interventions were found to be inconsistent. Time, student buy-in, and progress monitoring student learning were found to be barriers to successful implementation of small-group instruction. The interviewed teachers perceived the instructional videos and questions from Khan Academy as not always aligning with the ways in which they taught and assessed content knowledge. In addition, the Coronavirus pandemic made it more challenging for teachers to find time to implement Khan Academy in instruction. Consequently, the teachers used different online platforms that are better tailored to students' instructional needs. The findings of this study may be used to inform and support high school building leaders in creating professional development trainings, ongoing coaching support, and collaboration days that better support teachers in implementing MTSS instructional interventions with fidelity. It is hoped that this will lead to more successful outcomes for high school students.

A PROGRAM EVALUATION OF HIGH SCHOOLTEACHERS' PERCEPTIONS OF IMPLEMENTING TIER I INSTRUCTIONAL PRACTICES OF A MULTI-TIERED SYSTEM OF SUPPORTS

CHAPTER 1

INTRODUCTION

Legal and policy mandates have raised the pressure on educators to create students who have the skills required to compete on a global scale (Every Student Succeeds Act [ESSA], 2015). In recent years, Congress has passed laws mandating legal accountability for student achievement, with schools being the entity in charge of these results. Congress's goal is to provide additional help for students who are facing challenges in the classroom (Gerzel-Short & Wilkins, 2009; Planty et al., 2009).

ESSA, which was signed into law by former President Barack Obama on December 10th, 2015, reauthorizes the 50-year-old Elementary and Secondary Education Act, which symbolizes the national education legislation and a long-standing commitment to ensuring equitable opportunity for all children (ESSA, 2015). The ESSA presents a renewed focus on the use of evidence-based activities, strategies, and interventions in the classroom (McFarland et al., 2018). The ESSA gives states more leeway in deciding on particular policies and service delivery models in order to enhance school environment, promote school safety, and extend access to comprehensive learning aids (McFarland et al., 2018). The ESSA, in instance, creates a framework with levels of evidence for policymakers and educators to evaluate and apply. While useful, this approach does not answer all issues about whether academic and social-emotional activities would qualify as evidence-based and be most valuable to states, districts, and schools if they met these levels.

Concerns about public school education and the nation's educational accomplishments spurred legislators in Colorado to establish Response to Intervention (RtI) program, which is aimed at identifying and improving the success of at-risk children (Burns et al., 2007; Detrich, 2008). A critical component of RtI came about when educators became concerned with the over identification of students being learning disabled (Office of Special Education and Rehabilitative Services, 2002). When analyzing the validity of the process used to determine special education eligibility under the categories of specific learning disability, speech language impairment, and emotional behavioral disorders, two primary issues emerged from a number of studies. Firstly, it was extremely challenging to determine whether students with specific learning disabilities had progressed in their development of core academic skills (Project IDEAL, 2013). This has impacted thousands of students due to the lack of any evidence that these students were receiving the free and appropriate public education promised by federal special education laws (Project IDEAL, 2013). Secondly, the rise in the over identification of students with disabilities occurred with the increase of academic accountability that was put in place through No Child Left Behind (NCLB). A very large number of Hispanic, African American, and economically disadvantaged students were found within this population (Project IDEAL, 2013).

To address these concerns, several schools adopted the RtI programming to support students in the areas of reading and math. The RtI program was implemented in schools on a broad scale when the Individuals with Disabilities Education Act (IDEA) was introduced in 1990 and early intervention services for students struggling academically in public schools were integrated into NCLB (Sanders et al., 2007). The RtI program has been used by several state educational agencies not just to improve educational results for all children, but also to address chronic performance inequalities by more precisely identifying, recording, and assisting at-risk

students (Brown-Chidsey & Steege, 2005; Reschly & Hosp, 2004). Congress reauthorized the IDEA in 2004, albeit with some significant revisions. Because the reauthorized act differed significantly from the original, Congress renamed it the Individuals with Disabilities Education Improvement Act of 2004, or IDEIA (Sanders et al., 2007). The IDEIA proposed a four-tiered RtI process of intervention delivery: (a) effective scientific research-based instructional practices in general education; (b) scientific research-based small group intervention instruction in the general education classroom; (c) intensive, individualized instruction in the general education; and (d) evaluation and qualification for special education services (Brown-Chidsey & Steege, 2005).

Multi-Tiered System of Supports

Multi-tiered system of supports (MTSS) is a broad term that can be used to describe many multi-tiered, problem-solving methods to service delivery, such as RtI and positive behavior intervention supports (Stockslager et al., 2016). In recent years, the term MTSS has replaced RtI in many districts. The MTSS model of service delivery is built on a set of fundamental principles that address the challenges raised by the National Association of School Psychologists (n.d.) and the IDEIA (2004). An MTSS is defined as "the practice of providing high-quality instruction and interventions matched to student need, monitoring progress frequently to make decisions about changes in instruction or goals, and applying child response data to important educational decisions" (Batsche et al., 2005 p. 22). The MTSS approach, which is based on a problem-solving model, considers the potential impact of environmental factors on an individual student's academic and behavioral difficulties and is designed to improve the outcomes of all students by using assessments to determine student academic and behavioral performance, allowing for early intervention when academic and/or behavioral difficulties are

present (Batsche et al., 2005). To guarantee that student problems are correctly identified and treated, the MTSS model of service delivery involves the use of evidence-based practices and intervention, as well as data-based decision-making. (Batsche et al., 2005).

The ESSA national legislative standards and policy recommendations point to a transformation in curriculum and instructional method choices based on data. To properly respond to these demands, schools, districts, and states across the country must create and coordinate policies, practices, and procedures. The MTSS approach aids educators in integrating assessment and intervention into a multilevel preventative system in order to increase student achievement and decrease behavior problems. Schools utilize MTSS to identify students with achievement gaps, monitor student progress, provide evidence-based interventions, and alter the intensity and nature of those interventions depending on a student's responsiveness. Furthermore, educators can use the MTSS model to identify students with learning or other disabilities (Kohm & Nance, 2009).

Program Description

One public charter school network in Colorado implemented an MTSS to meet the needs of students. PRIME Preparatory Schools (PRIME Prep) is an urban-based community of free, open enrollment public charter schools committed to providing every student with high-quality, college preparatory education. PRIME Prep was founded in 2006 and is based on the belief that students from all backgrounds deserve a college preparatory education regardless of race, economic circumstances, or previous academic achievement. In 2006, PRIME opened its first campus in Colorado. The charter network has since expanded into other parts of Colorado and has eventually come to serve students ranging from kindergarten to the 12th grade. Currently, PRIME has 10 schools serving approximately 3,700 students across Colorado. According to the

2018–2019 demographics report, approximately 87% of the student population are eligible for free and reduced-price lunch, 97% of students identify as students of color, 49% are English Language Learners, and approximately 13% receive special education services. Two of the schools in the network are high schools, seven are middle schools, and one is an elementary school. Back in 2019, PRIME High School had been selected by PRIME's central office to pilot MTSS at the high school level.

The student services team at PRIME Prep central office determined that in order for every PRIME Prep student to achieve post-secondary readiness for college, high-quality academic instruction must be complemented by layered, proactive, and targeted interventions and supports to address any existing achievement gaps. To achieve the network's vision, PRIME Prep High School recognized the significant achievement gap disparities in terms of students meeting the college and career readiness benchmarks set by the College Board. The goal of MTSS is to minimize these achievement gaps in reading and math to ensure that students are college and career ready.

For the purpose of this study, one high school was examined from PRIME Prep, known as PRIME High School. Currently, PRIME Preparatory schools has established a MTSS leadership team at each the level of each building but not a unified MTSS structure for all schools to follow. PRIME High School is a Title I public charter high school in Colorado. It is a college preparatory public school. PRIME High School opened in 2016 and currently serves 600 students in Grades 9 to 12. At PRIME, 86% of students are eligible for free and reduced-price lunch, a proxy for poverty. Approximately, 94% percent of students identify as people of color (specifically, 71% identified as Latino, 6% as White, 15% as Black, 4% as Asian/Pacific

Islander, and 4% as mixed race). 35% of students are English language learners, and 10% of students receive special education services.

According to College Board, students are deemed college and career ready when their SAT section scores match both the Evidence-Based Reading and Writing, and Math benchmarks (College Board, 2014). The College Board has set grade-level benchmarks for ninth, 10th, and 11th grades, which are 410 for ninth-grade evidence-based writing and reading, 430 for 10th grade, and 460 for 11th grade. For math, the grade level set benchmarks are 450 for 9th grade, 480 for 10th grade, and 510 for 11th grade. The college readiness benchmark is associated with a 75% chance of a student earning at least a C grade in a first-semester credit-bearing college course in a relevant field. The PSAT10 and PSAT9 grade level benchmarks represent the expected year-long growth a student needs to be prepared to meet the college-ready benchmarks on the SAT in 11th grade.

For the 2018–2019 school year, PRIME High School had all ninth-, 10th-, and 11th-grade students take the Colorado grade level P/SAT assessment, which was administered to all Colorado and Denver public high schools. Table 1 compares the percentage of PRIME Prep High School's students who met the reading and writing and math benchmarks to the district. The percentages highlighted in red indicate where PRIME High School's percentage of students who met grade level benchmarks was below the average of Denver Public Schools District. In addition, the figure includes the scores for the two largest racial/ethnic groups that PRIME High School serves.

Table 1

2019 Colorado SAT, PSAT, and PSAT 8/9 Results

SAT CCRB	EBRW: 410 (9th), 430 (10th), 450 (11th).	Math: 450 (9th), 480 (10th), 510 (11th)	DPS % of Students Meeting GLB for EBRW	DPS % of Students Meeting GLB for Math
PRIME High School combined percent for meeting grade level benchmarks	52.3% for all grades combined for PHS	34% for all grades combined for PHS	53.2% for all grades combined for DPS	37.5% for all grades combined for DPS
9th	55.9% for PHS	27.9% for PHS	54.8% for DPS	42.2% for DPS
10th	55.0% for PHS	34.9% for PHS	55.5% for DPS	36.5% for DPS
11th	45.8% for PHS	40.0% for PHS	48.7% for DPS	33.0% for DPS
Black	50.0% for all PHS grades combined	34.6% for all PHS grades combined	40.9% for all DPS grades combined	23.8% for all DPS grades combined
Hispanic	50.9% for all grades combined	33.2% for all grades combined	41.6% for all grades combined	25.7% for all grades combined

Note. Adapted from Colorado Department of Education. (2019). *2019 Colorado SAT Data and Results*. CCRB= College and Career Readiness Benchmarks. EBRW= Evidence-Based Reading and Writing. GLB= Grade-level benchmark. DPS= Denver Public Schools. PHS= PRIME High School.

The function of the MTSS team is to make sure that all levels of the system, including the district, school, classroom, and individual student, are properly implemented. To clarify the goal and desired outcomes, the team first developed a shared vision and language. The system's support requirements are determined using school-level progress statistics and a data-driven problem-solving and decision-making process. Leadership teams examine and evaluate progress data on a regular basis to figure out how to best deploy funding and resources, including evidence-based professional development for educators (Colorado Department of Education,

2021b). PRIME Preparatory Schools is still in the process of determining how to allocate funding and available resources. More direction will hopefully be provided in the 2022-2023 school year.

The use of data and information to make decisions about student development and achievement is critical to the success of an MTSS framework (Colorado Department of Education, 2021b). A paradigm shift in thinking is required for PRIME High School to embrace and operate as a problem-solving culture. The shift is the awareness that student progress is the result of all members of the school building staff working together to ensure that the curriculum, instruction, and environment are all in place to support student learning. Effective leadership promotes the creation of mechanisms and an environment that support and motivate educators to handle problems at all levels and fulfill student needs more efficiently (Colorado Department of Education, 2021a).

MTSS Programming at PRIME High School

During the 2017–2018 school year, PRIME Preparatory Schools launched the MTSS committee protocols for high schools within the network. Each building team was designated an MTSS committee, which has been established by each campus team. At PRIME High School, the committee consists of the Principal, the Assistant Principal of Instruction, the Assistant Principal of Student Services, the Dean of Culture, a special education teacher, a math teacher, the Chair of the Special Education Department, a school social worker, an English language arts (ELA) teacher, an English language development specialist, and the school psychologist.

For the 2021–2022 school year, PRIME High School's academic prevention-based framework has been revised and divided into three tiers. Tier I, universal instruction interventions, include the following:

- Assessment and screeners: universal screeners, benchmark assessments, and formative classroom assessments.
- Evidence-based strategies: integrated content language development, universal design for learning, heterogeneous groups/small group instruction, Collaborative learning, Differentiate content, product, or process.
- Supplemental programs for individualized instructional time (IIT): computer- or teacher-led programs that focus on pre-teaching, reteaching, small-group instruction, and/or providing additional practice for grade level/near-grade level skills (e.g., Khan Academy, Newsela).

Targeted group interventions occur when students are not making adequate progress in the core curriculum. At this juncture, students are receiving increasingly rigorous interventions that is tailored to their level of need based on their performance and rates of development. The following are examples of Tier II, focused teaching interventions:

- Assessment and screeners: diagnostic screeners or assessments.
- Progress monitoring using program-specific tools or curriculum-based measurements.
- Evidence-based strategies: homogenous groups/small-group instruction, increased duration and/or frequency, explicit and systematic, multi-sensory.
- Evidence-based intervention programs for basic reading skills (HD Word, Lexia, IReady), reading fluency (Read Naturally, eSolutions), reading comprehension (Khan Academy, Reading A-Z, IXL), writing (Step up to writing, Language live), or math (Khan Academy, IXL).

Targeting students' skill gaps for the remediation of current problems and the prevention of more serious problems occurs in intensive instruction interventions, known at Tier 3. This tier includes the following:

- Assessment and screeners: diagnostic screeners or assessments.
- Progress monitoring using program-specific tool or curriculum-based measurements (one to two times a week).
- Evidence-based strategies: same as tier with greater intensity, 1:1, and increased duration and/or frequency.
- Evidence-based intervention programs for basic reading skills (Phonics Boost, Lexia), reading fluency (6 minute solutions, Read naturally), reading comprehension (Khan Academy, IXL), writing (Step Up to Writing), or math (Do the Math, Math Navigator).

Focus of the Evaluation

For the purpose of this study, the focus was specifically on two Tier 1 classroom interventions, small-group instruction, and the use of the computer-led program Khan Academy. The program evaluation focused on examining teachers' perceptions of their current skills in implementing MTSS interventions, factors that facilitate and conditions that inhibit the implementation of these two, specific, academic Tier I MTSS interventions, and the extent to which teachers are implementing small-group instruction and Khan Academy interventions in the classroom.

The evaluator selected these two specific classroom interventions to address the achievement gaps in reading and math at PRIME High School. The MTSS program is intended to serve students who have academic deficits based on classroom-based assessments, STAR, and CMAS/PARCC; to make determinations about student needs and the root cause(s) of students' lack of adequate progress for Tier 1 interventions.

During the testing window of August to September of 2019, all students at PRIME High School were required to take the STAR Math and STAR Reading assessments to provide staff

with a baseline of information regarding individual student performance (Renaissance Learning, 2015). The STAR Math and Reading Assessments are online assessments that take approximately 30 minutes to complete. Teachers receive immediate feedback on each student's strengths and weaknesses and can create an academic plan to support student skills and abilities (Renaissance Learning, 2015). STAR Reading covers developing word knowledge and skills and comprehension strategies, analyzing literary texts, understanding author's craft, analyzing arguments, and evaluating texts, while STAR Math tracks development in terms of numbers and operations, algebra, geometry and measurement, and statistics/probability.

For the fall of 2019, the instructional reading level of students at PRIME High School according to STAR Reading was an average of 3.4 years below grade level. 82% of students in Grade 9, 74% of students in Grade 10, 67% of students in Grade 11, and 65% of students in Grade 12 tested with an instructional reading level of at least two grades below their current grade. In STAR Math, the grade level equivalent of students on average was half a year below grade level. 45% of ninth graders, 36% of 10th graders, 25% of 11th graders, and 15% of 12th graders had a math grade level equivalent of at least two grades below their current grade.

To narrow achievement gaps and support the goal of preparing students for college and career readiness, the network leaders/student services team for PRIME Preparatory Schools recommended that teachers implement certain Tier I instructional strategies during classroom instruction. One of these instructional interventions is small-group instruction. Small-group instruction has been recommended as an intervention technique to improve student performance (Jones & Henriksen, 2013). Small-group instruction can be effective in reducing the number of struggling readers to less than 5% of a school's population. Other benefits of small-group instruction include implementing differentiated instruction to focus on specific skills, providing

explicit instruction during lessons, and increasing student engagement through creating math labs, reading centers, or hands-on activities to support critical thinking (Morgan, 2014).

Another intervention strategy is the use of the free online computer-based program Khan Academy. Khan Academy is a nonprofit website that provides free video lessons on skill building, exercises, and assessments in math, ELA, arts and humanities, science, economics, and test prep for different college/graduate school entrance exams. At PRIME High School, it is recommended that math and ELA teachers implement 25–30 minutes of IIT daily in their classroom. The IIT block is individualized and leverages technology (Khan Academy) in order to provide instant feedback and access to content that is not covered in the core curriculum, which enables students to address skills at an individual level.

Based on these two Tier I instructional interventions, the school's MTSS committee guides the implementation across the school, which includes the following:

- Frequently communicating and collaborating with teachers on student intervention plans and intervention strategies.
- Monitoring teachers' data collection, progress tracking, and analysis of progress monitoring.
- Engaging in ongoing collaboration and communication with the school building leadership team and PRIME's student services team in order to guarantee instructional improvement with school-level implementation.
- Working with the student services team to develop and facilitate trainings for school staff.
- Using team problem-solving meetings along with student performance (e.g., progress monitoring, benchmarking) data to identify necessary instructional intervention schedule changes.

Teacher Professional Development

In the past, PRIME Preparatory Schools has provided very limited professional development and training to teachers on delivering interventions. In past years, the student services team for PRIME Preparatory Schools had the director of MTSS provide a training on the introduction of PRIME's MTSS programming, how to use Khan Academy, IXL, and other supplemental programs during IIT, and support with creating MTSS building level committees, so that they could train grade level teams on the problem-solving process. Typically, the director of MTSS provided an annual training to the entire staff at PRIME High School at the beginning of the year, met with the MTSS building-level teams on a biweekly basis, and presented an annual training on supplemental programs and exemplary videos of small group instruction to departmental teams.

For the 2019–2020 school year, the student services team attempted to implement additional trainings and professional development for campus MTSS leadership teams and grade-level teams. The student services team began to provide training to the teams listed below but was unable to provide consistent trainings and professional development due to the Coronavirus pandemic. For campus-level MTSS leadership teams, training and professional development activities for the fall of 2020 included the following:

- Scheduling and staffing of interventions.
- Overseeing the training and coaching of teachers.
- Delegating and supporting the implementation of intervention programs.
- Setting up and maintaining expectations for data tools and analysis of data.
- Facilitating Tier 2 and 3 student problem-solving meetings.

For grade level teams/teachers, training included the following:

- Analyzing formative data to identify trends and needs specific to individual students, groups of students, content areas, and classes.
- Assessing group and class response to instructional design and delivery and identifying Tier 1 supports (e.g., scaffolds, accommodations, etc.).
- Using universal screening and progress monitoring tools.

The logic model for this program (see Figure 1) presents all of the inputs, processes, and outcomes for the MTSS programming for PRIME High School.

Figure 1

Logic Model

INPUTS	PROCESSES		OUTCOMES		
	Activities	Participants	Short-term	Medium-term	Long term
• School Based MTSS Team • Grade Level Teams • Universal Screening Processes • Problem Solving Process All students demonstrating an academic performance gap are screened using the following targeted screeners: • Standardized Assessment for Reading (STAR) Literacy and STAR Math • Master in Computing (MCOMP) Curriculum based measurement (CBM) • Phonics Diagnostic Decoding Survey • Oral Reading Fluency	Tier 1: High-quality instruction differentiated to meet students' needs. Evidence-Based Strategies: • Integrated Content Language Development (ICLD) • Universal Design for Learning (UDL) • Differentiate content, process, or product • Small group instruction (heterogeneous grouping) • Collaborative learning Supplemental Programs: • Computer led that focus on pre-teach, re-teach, and/or additional practice for grade level/near-grade level skills (Khan Academy) All progress monitoring demonstrates all of the following components: • If academic, aligned to the instructional level • Goal and target rate of improvement • Collected at consistent intervals of every 2-3 weeks	Students 7 Math teachers, 4 ELA teachers, and 4 World Studies teachers for interviews. Prime High School teachers and staff taking the *Perceptions of RtI Practices Survey* to self-rate their perceived skills in problem solving and data practices.	Improved instruction through seeing an increase in teachers providing weekly tier i evidence-based instruction and supplemental programs. Increase in teachers' confidence in their perceptions of their skills in implementing screeners, tier i academic interventions, and progress monitoring.	The Multi-tiered System of Supports (MTSS) team can use the data gathered from tier i interventions to accurately determine whether a scholar's interventions are effective or whether the scholar needs new interventions or whether the scholar needs to be pushed to a higher MTSS tier (clear progress monitoring)	Students receiving and participating consistently in tier i and tier ii interventions minimize achievement gaps in Colorado Measures of Academic Success (CMAS), performance assessments, and classroom-based assessments. Increase in on-time graduation rates with students who are 2 or more grade levels below in reading and/or math.

This study focuses on PRIME High School teachers' perceptions of their current skills in implementing Tier 1 interventions, the factors that facilitate and the conditions that inhibit the implementation of small-group instruction and Khan Academy interventions, and the extent to which teachers are using these specific Tier 1 interventions in the classroom. The implementation of small-group instruction and Khan Academy assumes that teachers have the knowledge and skills required to implement Tier 1 interventions. The evaluation questions for this study are as follows:

1. To what degree do teachers perceive they have the skills required to implement Tier 1 interventions?
2. To what extent do teachers report that they are using small-group instruction and Khan Academy in the classroom?
3. What are the factors that facilitate and the conditions that inhibit the implementation of instructional Tier 1 interventions (small group-instruction and Khan Academy) of MTSS at PRIME High School?

Overview of the Evaluation Approach

The program evaluation focused on what was working and therefore fell under the pragmatic paradigm and use branch of program evaluation. The focus was on performing evaluations that could offer information that the relevant stakeholders could use in making informed decisions (Mertens & Wilson, 2012). Because the outcomes of an evaluation should be meaningful and valuable to those who commissioned it and the evaluand's stakeholders, pragmatists understand the importance of knowing what works and what is valued within a context. The axiology of pragmatic program evaluation, according to Mertens and Wilson (2012), is utilitarian; in other words, do the outcomes justify the means? To that aim, the MTSS

evaluation questions and data collection strategy were created to see if and how the program has benefited specific stakeholders (teachers and school building leaders) in a specific context and in relation to conflicting demands and requirements.

Program Evaluation Model

The overall design of this program evaluation was based on Stufflebeam's (2000) CIPP model. The participants' comments and actions under the logic model's procedures were the subject of this formative research. The CIPP model, in particular, aids in determining the degree to which defined inputs and processes interact successfully to produce a program's targeted objectives (Mertens & Wilson, 2012). A product or impact evaluation (interchangeable names for the last phase of the CIPP model) can assist in identifying the program's planned and unexpected advantages for diverse stakeholders. The perspectives of various teachers on the program were evaluated using qualitative and quantitative research methods to analyze teachers' perceptions of their abilities in implementing interventions, as well as their perceptions of MTSS programming. At different phases of the evaluation, such as deciding on the logic model and selecting the most relevant evaluation questions for the current evaluation cycle, the CIPP model allows for stakeholder engagement and therefore, more buy-in. It also enables for the inclusion of formative purposes in the evaluation.

Purpose of the Evaluation

The focus of the evaluation was on the activities of and participants in the logic model (small-group instruction, Khan Academy, teachers/staff at PRIME High School) in determining teachers' perceptions of their skills in implementing these Tier 1 interventions, the extent to which teachers are using these interventions in the classroom, and the factors that facilitated and inhibit the implementation of Tier 1 MTSS interventions at PRIME High School. When a

program has not been in place for long, it is difficult to measure its outcomes. In such cases, it is more appropriate to measure the fidelity of implementation, as doing so is essential to understanding a program's strengths and areas for improvement. This study was a formative evaluation intended to allow PRIME Preparatory Schools to make improvements to their MTSS programming. The logic model outlines other outcomes, such as the short-term, medium-term, and long-term outcomes, but they are not the focus of this evaluation.

This process was three-fold. The relationship between teacher' perceptions of MTSS practices, the extent to which teachers reported that they were using Tier 1 interventions (small-group instruction and Khan Academy) in the classroom, and their perceptions of the factors that facilitate and inhibit the implementation of Tier 1 interventions were investigated. This helped PRIME High School to obtain a better understanding of the core components of MTSS that school faculty and staff perceived as priorities for implementation.

Based on the findings, the study has provided more consistency of teachers' perceptions of MTSS, which has helped PRIME High School identify future needs for professional development and training for teachers through providing training and appropriate professional development to support integration of MTSS into classroom instruction. The results of the study have been intended to contribute to improving the program.

Focus of the Evaluation

The focus of this evaluation was on teachers' perceptions of their skills in implementing small-group instruction and Khan Academy interventions and the factors that facilitate and inhibit the implementation of these Tier 1 MTSS interventions, or the activities part of the logic model. The implementation of the activities and collaboration from participants have led to the short-term outcomes of the MTSS logic model, which included making recommendations

concerning further training, professional development, and the systems that need to put in place to support teachers in mastering all components of implementing screeners at beginning of the year; progress monitoring; and implementing evidence-based strategies and/or supplemental programs.

Evaluation Questions

Questions addressed by this evaluation include the following:

1. To what degree do teachers perceive they have the skills required to implement Tier 1 interventions?
2. To what extent do teachers report that they are using small-group instruction and Khan Academy in the classroom?
3. What are the factors that facilitate and conditions that inhibit the implementation of instructional Tier 1 interventions (small group-instruction and the use of Khan Academy) of MTSS at PRIME High School?

This formative program evaluation was intended to provide school and district leaders with information that could contribute to making MTSS programming successful for teachers, thus increasing teacher growth in terms of delivering instructional interventions and supporting student achievement.

Definitions of Terms

Individualized instructional time—To reach and exceed the rigor of grade level common core standards and help students master their incoming skill gaps, an IIT block is incorporated into the 100-minute math and middle school ELA courses as well as high school math courses for all students. The IIT block is individualized and leverages technology in order to provide

instant feedback and access to content that is not covered in the core curriculum, which enables students to address skills at an individual level.

Multi-tiered system of supports (MTSS)—A prevention-based framework with a data-based problem-solving approach to improve the outcomes of every student through collaboration between school, family, and community stakeholders and a layered continuum of evidence-based practices implemented at the classroom, school, district, region, and state levels (Colorado Department of Education, 2021a).

Response to intervention (RtI)—A school-wide model that uses resources to support students in need of academic and/or behavioral support. RtI provides a system of interventions and resources intended to support students in making progress (Colorado Department of Education, 2021b).

Small-group instruction—A range of teaching strategies that can be applied to a variety of subjects and ages where students work together in a structured manner in order to maximize the learning of all (Slavin, 1977).

Tier 1 instruction—Regular classroom instruction provided by a certified teacher. All students have access to Tier 1 instruction, which, statistically, enables approximately 80–85% of students to progress through the curriculum without further intervention. This initial instruction is referred to as Tier 1 in a three-tiered system of instructional supports often referred to as an RtI. Instruction at Tiers 2 and 3 is characterized by increased frequency, duration, or intensity, as students demonstrate a need for more targeted instruction in order to meet grade level standards (Colorado Department of Education, 2021a).

Tier 2 instruction—Additional small-group instruction that is required for approximately 10–15% of the population to make adequate progress through the curriculum. Tier 2 instruction

can be provided by a classroom teacher or an instructional specialist (Colorado Department of Education, 2021a).

Tier 3 instruction—Individual or small group instruction, often using a systematic, structured curriculum and delivered by a trained specialist such as a reading teacher or special educator. Tier 3 instruction is reserved for students who are significantly behind in the curriculum (more than two grade levels below their current grade placement), who generally constitute 5% of the population (Colorado Department of Education, 2021a).

CHAPTER 2

REVIEW OF RELATED LITERATURE

This chapter presents a review of the literature, focusing on important elements of this study, which include the evolution of RtI to an MTSS, essential components of an MTSS, the need for an MTSS on the secondary level, challenges to implementing an MTSS, factors to improve MTSS implementation at the secondary level, and small-group instruction and the use of Khan Academy as Tier 1 interventions. It is necessary to examine the literature to provide schools with a better understanding of what they need to do to successfully implement and sustain an MTSS. Hagans and Powers (2013) identified the lack of data on statewide MTSS implementation as the most significant challenge in implementing an MTSS. Stuart and Rinaldi (2009) reported that educators find it helpful to have a framework with which to problem-solve instructional interventions and inform instruction. School leaders can use the literature to improve the school staff and community's knowledge of MTSS implementation and to create the infrastructure needed to implement Tier 1 instructional interventions.

Evolution of RtI to MTSS

The President's Commission on Excellence in Special Education (Pas & Bradshaw, 2012) suggested that RtI be used as a framework for assessing, intervening, and making decisions about where students should be placed in special education. In 2002, the NCLB Act brought about the commitment to provide an education to each and every student (NCLB, 2002). Through this act and the Commission on Excellence in Special Education, schools and districts across the country

were urged to help special education students exceed expectations. The Commission reported that the system used to determine special education eligibility at the time was a wait-to-fail model that did not focus on prevention and intervention. The hope was that the implementation of a prevention and intervention model would facilitate the earlier identification of children with special education needs because they did not respond to strong general education and appropriate instruction. The Commission determined that states with effective universal screening reported better student outcomes (Pas & Bradshaw, 2012). It was found that the implementation of early intervention and prevention in some states would result in fewer students being identified as requiring special education services, as such students would be targeted earlier and provided with support both in and outside of the classroom. It was recommended that states be permitted to utilize IDEA funds to support the early intervention program in addition to special education services.

In 1997, the authorization of the IDEA brought about positive changes by making general education and special education systems more interactive with one another. The IDEIA 2004 amended the requirement to determine eligibility for specific learning disabilities with a discrepancy model based on cognitive assessments by allowing for the use of other sources of data as the basis for eligibility (Turnbull, 2005). This change allows for the use of alternative models, including RtI. RtI is viewed primarily as a strategy for identifying students with specific learning disabilities, but it is also effective in aiding at-risk students and preventing the requirement of special education services (Werts et al., 2014). According to Werts et al. (2014), RtI is also known as a problem-solving model. These models rely heavily on the scientific method to determine whether a student is making progress with the current interventions and supports that are in place. A problem-solving model involves asking four primary questions:

1. What is the problem?

2. Why does the problem exist?

3. What should be done to address the problem?

4. Did the intervention work and what's next? (Werts et al., 2014)

With the reauthorization of the IDEA in 2004, RtI was codified in law and through special education policy. Although the specific phrase "response to intervention" was not used in the law, the use of RtI was made permissible in the IDEA through the following words:

> In determining whether a child has a specific learning disability, a local educational agency may use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures described in paragraphs (2) and (3). (Werts et al., 2014, p. 118)

This brief statement created the force and flexibility that educators and scholars needed to begin changing practices by implementing RtI in schools.

Through two important publications in 2006, the National Association of State Directors in Special Education (NASDSE) actively promoted RtI. The first was the RtI report (Batsche et al., 2005), which defined RtI and gave general recommendations for its implementation, as well as facilitating RtI leadership at the state and municipal levels. The NASDSE described RtI as "a practice of providing high-quality instruction and interventions matched to student need, monitoring progress frequently to make decisions about changes in instruction or goals, and applying child response data to important educational decisions" (Batsche et al., 2005, p. 3). In the report, RtI was conceptualized more broadly than in the IDEA as a school improvement process rather than simply as a tool with which to identify children with learning disabilities: "RtI should be applied to decisions in general, remedial, and special education, creating a well-

integrated system of instruction/intervention guided by child outcome data" (Batsche et al., 2005, p. 3). With the expansion of RtI to include a school-wide application of the framework, the term "multi-tier system of supports," or MTSS, emerged to describe such a broader application. A second important NASDSE publication was "Response to Intervention: Research for Practice" (NASDSE, 2007). This publication consists of 18 chapters that summarize research on a variety of critical issues related to RtI and implementation. The following topics are included: problems with the prevailing identification model (IQ achievement discrepancy), the overrepresentation of racial and ethnic minority students in special education, student outcomes, tiers of instruction, and cautions. Each of the 18 chapters is organized around the key issues of service delivery, implementation, and assessment. The purpose of this document is to facilitate the understanding and application of the vast amount of information on the topic.

Although debate over RtI models may continue, widespread agreement has been reached over the past decade concerning the utility of the collective, school-wide application of key RtI components, namely universal screening, problem identification, intervention implementation, monitoring student progress and implementation fidelity, and changing interventions and adjusting their implementation in response to student data as a school improvement model that includes RtI as a disability determination process (Kratochwill et al., 2007). What has emerged as a more viable model than either the standard-protocol or problem-solving approach is a hybrid of MTSS and RtI.

Today, the district-wide framework of RtI is commonly known as MTSS (Posny, 2007). It is helpful to think of RtI as a conceptual model for addressing specific academic needs and decision-making, whereas MTSS has a much comprehensive scope. MTSS addresses academic,

behavior, and social-emotional needs. Therefore, RtI is considered a component within MTSS that provides the overall organizational framework (Posny, 2007).

Rinaldi and Higgins (2014) completed a research brief documenting the transformation of RtI and Positive Behavior Interventions and Supports (PBIS) into MTSS. As documented, RtI began as a model that examines the universal screening of all students within multiple tiers (i.e., Tier 1, Tier 2, and Tier 3) through a problem-solving method that results in data collection and assessment. Each student is then moved through the tiers based on their growth or lack of progress at each level. PBIS is very similar to RtI, but it was used with the behavioral component of general education interventions. PBIS was designed to provide behavioral support for all students through a schoolwide intervention that promotes a positive school climate. Each tier successively implements more intervention strategies that support positive behavioral engagement. Both RtI and PBIS are similar, as they address the U.S. Public Health Service's multiple-tier pyramid model of prevention. Both of these can then be woven together to address MTSS.

According to Stuart and Rinaldi (2009), the combination of RtI and PBIS results in a comprehensive framework known as an MTSS. School and/or district personnel are then able to accurately address the academic and social-emotional development of youth within school systems. An MTSS has potential to alter an entire school or district when implemented because it addresses the whole student as opposed to targeting academics or social-emotional behavior individually. When an MTSS is implemented, there are differences between the monitoring of academic performance and social-emotional behavior progress, but the three-tiered system remains the same. Tier 1 continues to be universal, with Tier 2 providing additional support when necessary while still receiving Tier 1. Tier 3 still involves the implementation of tiers 1 and 2

where appropriate, as well as some intensive interventions, which could include receiving special education services. Special education is not required to receive Tier 3-level support. Student data are continuously tracked and monitored for progress or to identify additional needs when the tiers are implemented. The informed decision for next steps comes from a problem-solving model that identifies whether instruction needs to be adjusted in response to a student's lack of progress or if something more significant, such as a learning disability, is the cause. An MTSS also focuses on what can be done to support home–school communication and interventions. This integration increases the wraparound support and likelihood of student success within schools.

For some time, RtI and MTSS appeared to be synonymous, but, more recently, the interrelatedness of the two concepts has being acknowledged and reinterpreted into the next generation of the multi-tier framework. The combination of RtI and PBIS to create an MTSS will promote positive changes in both schools and students' homes when it is implemented with the participation of all stakeholders (Rinaldi & Stuart, 2014). Moving forward in the literature review, RtI is used to identify solely academic models, whereas MTSS is used to identify both academic and social-emotional behavioral models.

Essential Components of an MTSS

Recently, several state departments of education have explained the reasoning behind the transition from RtI to an MTSS; however, the differences between an MTSS and RtI require more clarity in order to understand why the change from RtI to MTSS was needed. While many may view MTSS framework serving as the new RtI, an MTSS does not replace RtI, as RtI is a process within the MTSS framework umbrella. RtI is intended to support the needs of struggling learners or identify students with learning disabilities who need special education. An MTSS is

the organizational framework that universally screens the entire population to identify anyone, even students who are succeeding academically, who may be at risk for social-emotional behavioral problems or academic difficulties and provides interventions or resources to ensure that these students' needs are met. MTSS places a higher value on collaboration between special and general educators and encourages policy and program alignment to enhance district-wide professional development (National Association of School Psychologists, n.d.).

According to the National Association of School Psychologists (n.d.), MTSS is based on three core principles:

- Effective teacher teaching is the most potent predictor of student success.
- All children can learn.
- Schools must give all children with an education that benefits them, starting with failure prevention.

As a result, in schools that are implementing MTSS/RtI, teacher decisions about student teaching should be data-driven and empathetic to student need. A multi-tiered model characterizes an MTSS, which provides increasing levels of help for students identified as needing it through universal screening or other school benchmarks. The model describes many levels of assistance for students, with the duration, frequency, group size, and intensity of the support varying. The length of time a student receives an intervention or assistance, such as the number of sessions or weeks, is referred to as duration. The number of times a day, week, month, or year that a group meets varies depending on the quality of support and content. The term "intensity" refers to the length, frequency, and size of a group. The greater the intensity of a student's demand, the more frequently and for a longer period of time support will be required, as well as the smaller the group designated.

Due to continuous feedback and information about implementation from practitioners and ongoing research, the Colorado Department of Education (CDE) has adopted the usage of the conceptual framework of an MTSS. The six components of RtI and the eight guiding principles of PBIS are used to create the major elements of MTSS, which are based on research from national sources such as the National Implementation Research Network and Colorado stakeholder feedback (Sugai et al., 2015). The government framework for an early intervention approach aimed at promoting student performance via research-based treatments tailored to students' needs is known as MTSS (Reeves, 2009). Educators may use this integrated programming to identify and treat academic and behavioral issues before student failure. Monitoring students' responses to a sequence of increasingly diverse interventions can help guide education and prevent academic failure. As more extensive interventions become available, these "tiers" become more intense (Gersten et al., 2008). All children in the standards-aligned system receive data-driven education as well as the extra help they require to succeed academically. The system is pushed by data to uncover the root of the problem and the best method to solve it through evidence-based actions (Ervin et al., 2007). The heart of an MTSS is the provision of high-quality standards-aligned instruction in the core curriculum of general education.

Hagans and Powers (2013) outlined the essential components of an MTSS framework and noted that they be implemented with fidelity using evidence-based interventions. “Essential elements of an MTSS model include a multi-tier model of instruction, student assessment and decision-making, evidence-based interventions, maintenance of procedural fidelity, and development and sustainability of systems level capacity” (Hagans & Powers, 2013, p. 52).

The integration of current evidence-based educational reform efforts, such as RtI and PBIS, is an integral component of an MTSS framework in Colorado. The following are the essential MTSS components:

- Shared leadership
- Data-based problem solving and decision making
- Layered continuum of supports
- Evidence-based instruction, intervention, and assessment practices
- Universal screening and progress monitoring
- Family, school, and community partnering

When schools and districts fully embrace and integrate these components into their organizational structures, the result is a whole-school prevention-based framework for improving learning outcomes for all students through a layered continuum of evidence-based practices and systems, according to the CDE (Roach et al., 2014). The success of an MTSS framework is determined by how well student outcomes interact with:

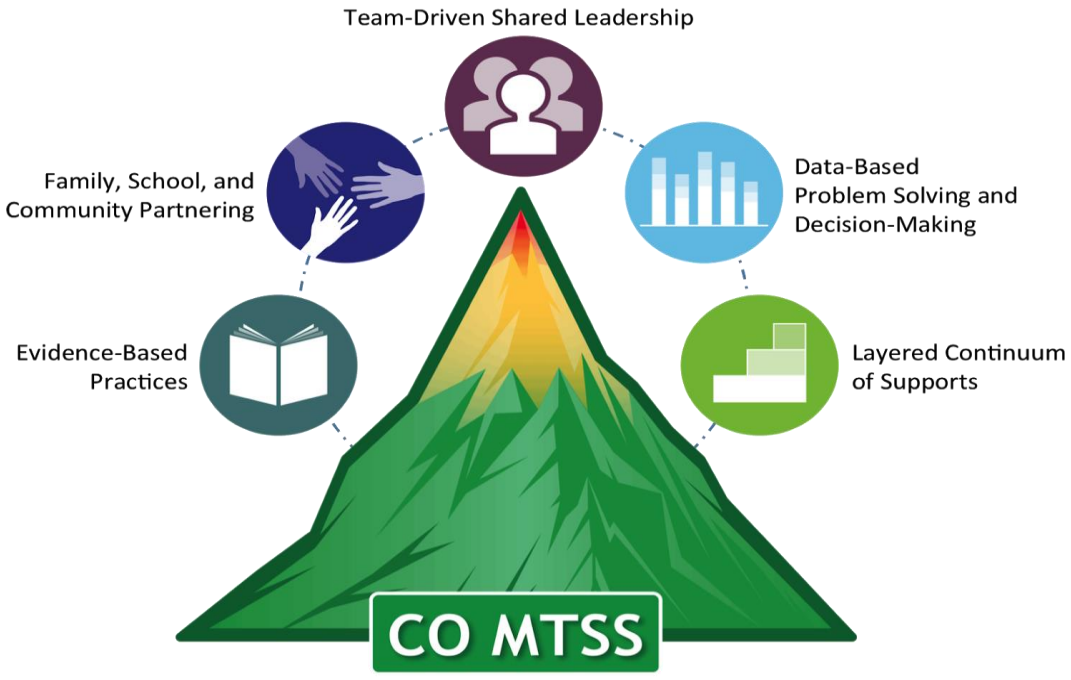
- the data used for decision-making
- the use of evidence-based practices to achieve student outcomes, and
- the systems that adults need in order to support the implementation of the practices.

The CDE previously claimed that a real MTSS process must include all six components, and that this process cannot work well until each area is addressed (Figure 3, Colorado Department of Education, 2019). The CDE, however, decided in 2015 that instructors could respond better to fewer components. As a result, the CDE dropped the universal screening and progress monitoring component while keeping the other five (Figure 4). The Office of Learning Support of the CDE, on the other hand, believes that universal screening and progress monitoring should

be integrated into the other components. The requirement for this component, according to the belief, is more prominent in schools nowadays, due to the need for data to identify future actions for children. Screening and progress monitoring offer the information needed to make these decisions. If practices are not stressed, educators are less likely to focus on them, and the risk is that this component will be lost in the process. Figure 2 presents the current Colorado MTSS framework (Colorado Department of Education, 2021b).

Figure 2

2015 MTSS Model



Note. Colorado Department of Education, 2021b. Copyright 2019 by Colorado Department of Education. Reprinted with permission. MTSS= Multi-tiered System of Supports.

MTSS and Universal Screening for Academics

The implementation of scientific research-based reading programs, which were mandated in 2001 by the Elementary and Secondary Education Act, became a top priority. Research-based

instruction, also known as evidence-based instruction, is based on the findings of scientific studies that provide evidence for the use and implementation of specific instructional methodologies and programs. As a result, evidence-based procedures have been designated as MTSSs (Henderson, 2017). The federal government has financed guidance documents on how to choose evidence-based approaches. Guidance documents on selecting evidence-based practices have been federally funded.

Universal screening measures should be used by schools providing services in an MTSS framework to help identify students who may be at risk for future academic failure or delayed or inadequate social, emotional, or behavioral development. The method of offering a brief examination to pupils who are having difficulty learning is known as universal screening (Jenkins et al., 2007). During the school year, universal screening is usually done three times: in the fall, winter, and spring. Brief evaluations focusing on target skills (e.g., reading comprehension) that are strongly predictive of future results make up universal screening measures (Fuchs & Deshler, 2007). Although most studies on universal screening focuses on reading, it has also been shown to be beneficial in the areas of writing, math, and behavior (Fuchs & Deshler, 2007). All students are evaluated in one or more of these academic areas in a typical MTSS approach, and those identified as at risk for learning or behavior challenges are given evidence-based interventions in the at-risk area. Fuchs and Deshler (2007) recommend identifying students who "are at-risk" early (e.g., in kindergarten or first grade or at the beginning of the school year) to allow them to participate in prevention services before the onset of substantial academic deficits. The purpose of early detection of possible issues is to maximize the chances that at-risk students will achieve adequate academic ability.

Several universal screening measures to measure students' performance on specific targeted skills have been examined and implemented in the MTSS model. Although this list is not exhaustive, some of the most common universal screening measures are curriculum-based measures (for reading, writing, and math), dynamic indicators of basic early literacy skills, and subtests of the Woodcock Reading Mastery Test–Revised. It is common for universal screening academic measures to measure students' performance in either accuracy or fluency (Jenkins et al., 2007).

There is not a clear consensus on which criteria should be used to identify students who are at risk in Tier 1 of the MTSS model (Martinez & Young, 2011). Some researchers and school districts have established a cut score or percentile criterion, whereby students performing below that criterion are considered at risk. Absolute performance levels or benchmarks can also be used to identify students who are at risk.

Progress Monitoring

Progress monitoring is an essential component of effective instruction and an evidence-based evaluation technique (Gutkin & Curtis, 2009). Progress monitoring must be done consistently throughout the school year in order to provide targeted support for MTSS implementation throughout the year (Donovan & Cross, 2002). Data on progress is collected on a regular basis (e.g., every six weeks) as part of universal-level interventions, and more frequently in secondary and tertiary levels. The data is used at a higher level to measure the effectiveness of instruction and to advise a change in instruction if it isn't working (Lane et al., 2010). A school-based team should ideally collaborate to assess progress and provide recommendations for instruction and other relevant supports (Sailor, 2014).

Tier 1: Universal Supports

The primary objective of MTSS implementation is universal supports, also known as Tier 1 instruction. Universal supports are provided in general education to all pupils (Burns et al., 2005). Tier 1 intends to reach out to the full general education school population by providing core curriculum and instructional interventions for kids who are progressing on track to meet grade-level expectations. This level of assistance includes research-based, high-quality introductory teaching. The first step in properly adopting universal supports is to provide evidence-based instruction and supports in a content area. The first step in lowering the number of students who will require more intense support and interventions is to implement Tier 1 interventions effectively (Burns et al., 2005).

Batsche et al. (2005) asserted that "if empirically proven best practices were used at this first tier, only about 6% of students would require secondary intervention" (p. 187). Several times throughout the year, many districts assess all children in reading and math. Educators use this information to identify students who are at risk of failing and provide them with a second tier of instruction that is tailored to their specific needs. Tier 2 services should be implemented when progress monitoring data indicates that students are performing below their peers in terms of both level and rate of improvement (D. Fuchs & Fuchs, 2006).

Castro-Villarreal et al. (2014) defined an MTSS in the following systematic approach. Tier I within an MTSS framework relies on universal screening procedures that are psychometrically sound in order to determine the baselines of all students within a school. By conducting baseline assessments, one is then able to evaluate academic needs and work to identify students who are at risk of academic failure. Once students who are at risk for potential academic failure are determined, one can determine whether they require supplemental academic

supports or additional interventions. If an MTSS is culturally responsive, then other considerations will be taken into account. These factors include considering the instructional content, the instructional and supplemental materials, and whether diverse youth have access to the appropriate curriculum.

A Tier I intervention could also be a program that a district implements to enhance skill development, whether it's a computer-based product or a hands-on workshop. A change in educational style, such as a double dosage of explicit systematic instruction, could be an intervention. An intervention can also be a unique educational technique designed to address a specific need that a student or group of pupils may have (Hall & Hord, 2015). The primary emphasis of this study is Tier I MTSS interventions.

Tier 2: Targeted Supports

Targeted supports, also known as Tier 2 instruction, usually incorporate small-group instruction based on evidence-based interventions that specify the instructional techniques, duration (often 10–15 weeks of 20- to 40-minute sessions), and frequency of instruction (3 or 4 times per week). Secondary prevention has at least three distinguishing characteristics: it is evidence-based (rather than research-based); it focuses solely on adult-led small-group instruction rather than whole-class instruction; and it entails a clearly articulated, validated intervention that should be adhered to with fidelity (Dulaney et al., 2013). Targeted academic and behavioral support attempts to prevent deficits and remediate abilities and strategies as early as possible. When a student getting targeted help achieves a goal, the focused support is tapered out and eliminated (Sailor, 2014), and the student returns to simply receiving universal supports (D. Fuchs & Fuchs, 2006).

Tier 2 interventions must meet three criteria: they must be (a) evidence-based, (b) delivered in small groups, and (c) use a specific intervention with fidelity. To put it another way, Tier 2 is more likely to involve small groups of students with similar learning requirements who collaborate with a teacher on a daily basis utilizing a specific instructional technique or program (Dulaney et al., 2013). The materials and methods used in Tier 2 are often comparable to those used in Tier 1 core instruction. Tier 2 intervention should always be used in conjunction with Tier 1 universal core instruction (Dulaney et al., 2013). Tier 2 should be used in conjunction with Tier 1 because students who have not yet accomplished their learning objectives require additional time to acquire, practice, and review their information and skills.

Tier 3: More intensive Supports

Tier 3 is the most intensive support level in the MTSS preventive structure. Tier 3 is the most demanding of the three tiers, and it is tailored to the specific needs of each student. At the tertiary level, the teacher starts with a more intensive version of the secondary preventative intervention program (e.g., longer sessions, smaller group size, more frequent sessions). The teacher, on the other hand, does not assume that it will suit the student's demands. Instead, the teacher monitors each student's development on a regular basis (at least weekly; Dulaney et al., 2013). In multi-tiered models with more than three levels, a more intensive tier of intervention is feasible. On this level of support, however, there is the least amount of study on MTSS implementation (D. Fuchs & Fuchs, 2006).

Data-Based Decision-Making

Data analysis and decision-making occur at all levels of MTSS implementation and all levels of instruction. Data-based decision-making can occur at the schoolwide, universal level down to the most intensive, individualized level. Decision-making is the evidence-based practice

used within the MTSS model to make decisions about student data. Within the MTSS model, there are three noted ways of making decisions: the problem-solving protocol, the standard protocol, or progress monitoring (D. Fuchs & Fuchs, 2006).

The problem-solving protocol is a process where a multidisciplinary team of school staff such as teachers, reading or math specialists, school social workers, school psychologists, and school building administrators, often referred to as a data team, gather to review the data and determine the next steps. The most common problem-solving method is a four-step model: (a) identify and define the problem, (b) analyze the possible causes and develop a hypothesis, (c) develop and implement a plan, and (d) evaluate the intervention plan (Batsche et al., 2005). The problem-solving process is applied throughout an MTSS model to identify supports for each student the data team identifies as being in need of additional support. Problem-solving and data teams have become the primary means to implement decision-making within the MTSS model, but there are concerns regarding the use of problem-solving (Davis-Bianco, 2010). The problem-solving process is a very resource- and time-consuming procedure because a group of professionals needs to come together to examine the needs of individual students.

Standard protocol decision-making is the process that matches a student's identified learning need with an evidence-based intervention. This decision-making process is known to be the most efficient and effective way to make decisions about student data (Burns et al., 2005).

Progress monitoring is the data tool used at the Tier 2 level to identify both students who are making progress in the current instruction and intervention level and those who are not making progress. Progress monitoring is usually done using a repeated measure such as a curriculum-based measure, and the data is graphed against a trend line of project growth (Castillo et al., 2015). Progress monitoring data is used to determine if the instruction and

intervention are effective, and if the student is responding to the intervention. The progress monitoring is done frequently, such as weekly, bi-weekly, or monthly (Batsche et al., 2006).

The Need for MTSS at the Secondary Level

In terms of practice and research, MTSS in secondary settings is substantially behind (Duffy & Scala, 2012). Educators are wary of just replicating the elements of successful primary MTSS models. Duffy and Scala (2012) discussed the cultural factors that are unique to high schools when it comes to MTSS implementation. They concluded that high school teachers occasionally perceive MTSS programming as being specifically intended for elementary school settings and believe that interventions need to be adapted to the high school context. The researchers also discussed how curriculum-based measurements and reading interventions have been primarily designed for elementary school settings (Duffy & Scala, 2012). Instead of focusing on reading progress in high school, educators should focus on preventing additional failure and dropout. It is simple to expand elementary MTSS techniques to secondary schools without addressing the developmental requirements of older students, according to Shinn et al. (2016).

Every day, almost 7,000 adolescents in the United States drop out of high school (Aud et al., 2013). Failing grades in essential academic content areas are one of the most significant risk factors related with dropout rates (Aud et al., 2013). Furthermore, as early as middle school, GPA and failing/D grades can be strong predictors of high school achievement (Cook et al., 2015). Students who are behind on their credits are more likely to drop out, and their academic achievement is often worse than their grade level peers (Cook et al., 2015). Furthermore, in 2015, students with impairments had an 8.1 percent higher dropout rate than their non-disabled counterparts (Hall & Hord, 2015).

There is a direct correlation with a negative cost and dropout rates. If the dropout rates continue without intervention on the secondary level, students who drop out of high school will see the effects of this decision immediately via their income. For example, in 2011, a high school dropout earned $19,540 annually; a student who had earned a high school diploma earned $27,380 annually (Hall & Hord, 2015). The annual income gap becomes even larger when high school dropouts are compared to those with an associate degree ($36,190) or a bachelor's degree ($46,930). According to data from the Bureau of Labor Statistics (2010), high school dropouts have a worse time getting and retaining employment than those with higher education levels. In July 2009, the national unemployment rate for high school dropouts was 15.4%, compared to 9.4% for high school graduates, 7.9% for those with some college credits or an associate degree, and 4.7% for those with a bachelor's degree or more. According to the National Research Council (2010), young high school dropouts are far less likely than their higher educated classmates to be active labor force participants, and when they do look for job, they face substantially higher unemployment rates. In 2008, over 54% of young high school dropouts in the United States were unemployed, compared to roughly 32% of young high school graduates, a disparity of more than 22 percentage points.

In addition, over 80% of the incarcerated population are high school dropouts, making this an issue that impacts every member of the community (National Research Council, 2010). It is apparent from income alone that those with insufficient education will have less financial security and living comfort over the course of their adult life than those with high school diplomas and beyond.

In retrospect, failing to address academic deficiencies in secondary students can have long-term consequences for children in a variety of areas outside of school. An MTSS can help

students with academic risk factors improve their academic achievements in a variety of ways (K. Robinson & Aronica, 2016). Identifying risk factors through data-driven decision-making and intervening before students fail or lose credits may lower their chance of dropping out and prevent credit loss. An MTSS framework also enables all children, whether in general or special education, to receive strategic or intensive interventions as soon as a need is identified. (K. Robinson & Aronica, 2016).

Challenges to the Implementation of MTSS

There are facets of MTSS that pose unique challenges, which in turn have led to limitations in the current research. In the *Handbook of Response to Intervention* (Jimerson et al., 2007a), the authors identify several additional areas of limitation in the research on MTSS effects, including a lack of research on the reliability and validity of team decision-making and on the structures that contribute to timely and accurate decision-making. This includes grade level teams and problem-solving teams. In addition, research is also lacking on how schools determine cut-scores for the identification of students to receive interventions and for movement between tiers. A lack of clarity about determining cut-scores can lead to over- or under-identification of students in intervention groups.

There are also studies concerning educators' perspectives regarding MTSS/RtI. Several studies indicated that, although there was knowledge about the MTSS/RtI process, educators and policymakers did not have a clear grasp of procedural steps or guidelines in implementing or using MTSS/RtI (Castillo, 2014). Cowan and Maxwell (2015) conducted a qualitative study designed to capture teachers' perceptions of the RtI implementation process from Texas high needs schools from all levels. One major finding indicated that teachers were familiar with the tiered structure but lacked the skills required to implement approaches. Furthermore, teachers

indicated that RtI could be useful but described various obstacles to the process, such as a lack of training on procedures, a lack of familiarity with the paperwork, and an excessive number of duties being placed on the teacher in the process.

In another study conducted by the National Center on Response to Intervention (2010), representatives of the three government research centers visited eight schools to analyze educators' understanding of RtI/MTSS at the secondary level. The researchers identified four primary concerns in the schools that they visited: challenges in terms of building staff capacity, difficulties in scheduling interventions, limited intervention resources, and challenges with implementing interventions consistently. All the schools' leadership teams and teachers cited challenges in scheduling interventions or even setting aside time for teams to hold data meetings. Teachers and school leaders recognized the challenge of creating a flexible schedule that allows students to move from content instruction to intervention. Schools expressed their concern with a lack of resources with the number of staff and intervention programs. In addition, all of the schools indicated that fidelity of implementation was a major obstacle, as most schools used state assessment data and observational data instead of more rigorous diagnostic measurements (National Center on Response to Intervention, 2010).

In a more recent study conducted by Chitiyo and May (2018), the following three themes emerged in teacher participant responses when discussing the challenges associated with MTSS:

1. The lack of preparation, knowledge, and skills to implement an MTSS effectively

2. Confusion with processes, with a lack of clarity with intervention procedures; and

3. The need for more adequate professional development on intervention tools and curriculum.

The teachers who participated in the study indicated that the frequent changing of available intervention tools and MTSS processes caused significant challenges for them. When

asked about what was needed, the teachers shared that more types of interventions were required to support student achievement in the areas of mathematics, written expression, and reading comprehension (Chitiyo & May, 2018). The teachers also indicated that the process of scheduling students to receive interventions was challenging. The participants indicated that when students receive interventions, they are not available to participate in regular in-class instruction. Finding times that had the least impact on students was identified as a challenge that had been introduced with the implementation of RtI/MTSS (Chitiyo & May, 2018).

When discussing the challenges associated with the practice of RtI/MTSS within the school setting, four participants indicated that how RtI/MTSS is used across grade levels and teachers was a challenge due to the different approaches. Participants indicated that not all teachers and grade levels use RtI/MTSS in the same way and that greater training and guidance were needed to make the practice of RtI/MTSS more consistent (Sugai & Horner, 2009).

Due to the uncertain quality of teacher instruction, differentiated effectiveness of instruction, and the use of a dependable intervention, there is an argument against using the MTSS model for the identification of students with learning disabilities. This problem not only hampered the identification of students with learning problems, but it also contributed to a second issue: there is no agreement on how MTSSs should be used and what interventions should be undertaken, according to researchers (Bean & Lillenstein, 2012). It was clear from these studies that in the absence of a clear vision and guidelines for using RTI/MTSSs, educators will struggle to implement this process successfully.

Factors to Improve MTSS Implementation at the Secondary Level

Educators must be aware of the fundamental changes in MTSS at the high school level, as well as the difficulties that are specific to high schools and must be addressed prior to

implementation (L. S. Fuchs et al., 2016). High schools, for example, are frequently larger than elementary schools and have more complex student schedules with multiple teachers per day than primary schools (L. Fuchs et al., 2016). Prior to the adoption of MTSS, the complexities of schedules must be addressed through staff collaboration, allowing time for intervention as well as suitable training and tools for teachers (L. Fuchs et al., 2016).

Based on their school site visits, the High School Tiered Interventions Initiative (HSTII), which was conducted by the National High School Center, National Center on Response to Intervention, and Center on Instruction (2010), created an implementation chart of factors that can support secondary schools with their RtI/MTSS implementation. This instrument of guiding questions can be used by leadership teams that are just starting to implement the framework. The first guiding question is what is the school's greatest concern (i.e., math or dropout rate)? Next on the chart is school culture, as to what are the beliefs, practices, and skills of the staff. Instructional organization is another critical component on the chart, as to how will staff create time for interventions, and who will provide the interventions/progress monitor. Another crucial aspect is student involvement, and the chart includes questions about how students will be involved in the implementation of interventions and how progress will be monitored. Finally, graduation criteria are discussed, including the impact interventions will have on a student's courses or credits needed to graduate.

A school district in Florida uses an eight-step planning and problem-solving process to monitor continuous improvement and guide decisions regarding its MTSS (Marion County Public Schools, 2016). During Step 1 of the process, the team sets goals and targets. Step 2 includes a discussion on available resources and barriers. In Step 3, the team prioritizes barriers and chooses one that can be addressed based on the complexity and cost of implementing

interventions when compared with the impact of the potential goal. During Step 4, the team considers strategies that may reduce or eliminate the barrier. Step 5 is the development of an action plan. Step 6 includes the decisions as to who will monitor the plan, what will be monitored, when it will be monitored, and what evidence will be used to measure the rate of growth. During Step 7, the team determines how effective the intervention is in terms of eliminating or reducing the barrier. Finally, Step 8 focuses on determining the progress being made toward the goal. The concept of these steps is to provide continuous collaboration and student improvement. Educational reforms such as MTSS depend on what teachers do and think (Gresham, 2007). Teachers must become an integral part of the change process to avoid projects failing due to a lack of teacher participation or buy-in (Gresham, 2007). Themes surrounding a teacher as an effective change agent emerged from a mixed-method research study on teacher change agents (Lukacs, 2015). Teachers who were effective change agents had traits such as acquiring stakeholder support, having a lifelong commitment to community service, and feeling teaching is a moral profession (Meyer & Behar-Horenstein, 2015). Even if a school or district has a large number of teachers that are good change agents, incentive is still required to keep them on track with the reform (Meyer & Behar-Horenstein, 2015). This can take many different forms, such as acknowledgment, monetary gifts, and empowerment.

Teacher empowerment is linked to professional development, which is a key component of MTSS implementation. The core components of MTSS, which include, but are not limited to, data-based decision-making, research-based interventions, the three-tiered delivery model, and progress monitoring, are often the focus of professional development (Zumeta, 2015). Teachers must be trained on these components, but because of their position in change, professional development must take into account teachers' perspectives on what is required. Rather than

ignoring concerns, empowering teachers' opinions on reform will have a positive impact on teachers' commitment to reform and readiness to participate. (Zumeta, 2015).

Small-Group Instruction

A major component of Tier 1 intervention is universal screening. Secondary schools should utilize universal screening assessment tools such as STAR Reading, STAR Math, or DIBELS at least three times a year to monitor students' performance in terms of important academic skills and standards (NASDE, 2007). Once grade level teams or department teams have the screening data, they should analyze them to determine areas for differentiated whole-group or small-group instruction for students who may need Tier 1 instructional interventional support.

Universal screening data and ongoing progress monitoring on classroom assessments support teachers in identifying students who need additional support at Tier 1. Once these students have been identified, the general education teachers implement basic whole-group or small-group interventions to support the students' academic needs. Examples of such interventions include a differentiated assignment, reading groups, or small-group instruction on a specific mathematics skill.

One intervention approach that is commonly observed in classrooms is small-group instruction. The small-group approach allows a teacher to develop action plans that meet the need of students in order to improve student performance. Small-group instruction is more successful than whole-group instruction, according to Wasik (2008). Teachers can employ differentiated instructional strategies to address the requirements of each student, prepare lessons based on their abilities, and respond to students quickly. Furthermore, small-group instruction is more effective and easier than whole-group instruction, according to teachers (Wasik, 2008).

Structured small-group instruction ensures that students are engaged cognitively, physically, psychologically, and emotionally in the construction of knowledge (Johnson et al., 2000). According to Johnson et al. (2000), small-group instruction is defined as learning in a setting where students and a teacher work together in a group that is small enough to allow active participation of each group member toward a shared goal. Effective learning occurs when students are intellectually engaged with other students. This leads to students constructing, discovering, transforming, and extending knowledge (Johnson et al., 2000). Small-group instruction the opportunities for structured student learning, in which students are able to work together to maximize each other's achievement while building self-efficacy (Johnson et al., 2000). Students work together toward a common goal, discuss information, critique each other's ideas, and draw conclusions about the assigned task.

In 1999, Taylor, et al. conducted a study on the practices of expert teachers who were promoting high achievement among students for whom failure was a common experience. Approximately 70 teachers from 14 different elementary and middle schools in California, Colorado, Virginia, and Minnesota participated. It was concluded that time spent in small-group instruction for literacy intervention distinguished the most productive schools from the rest of the study and teachers in these schools cited this as a reason for their success. Reading instruction at the elementary level included teacher-directed reading of narrative and expository material, literature circles, and instruction in phonics, vocabulary, and comprehension. Across these activities, students in the more effective schools spent more time engaging in small-group instruction than students in the moderately and least effective schools.

Small-group instruction also has the potential to improve student conceptual understanding of mathematics and develop increased mathematical reasoning skills and

procedural fluency in math operations. Working in small groups can also promote positive student dispositions toward mathematics (Jansen, 2012). In addition, Jansen (2012) found that sixth-grade students indicated both academic and social benefits of working in small groups, which included learning to use multiple solution strategies, developing intellectual autonomy, and completing work efficiently.

Implementation of Small-Group Instruction and Techniques

Historical evidence shows that structured small-group instruction yields positive results for students (Hertz-Lazarowitz et al., 1992; Schniedewind & Davidson, 2000; Slavin, 1977, 1980, 1983; Vaughan, 2002; Webb, 1982, 1989). Specifically, heterogeneous grouping, where struggling learners work together with high-achieving learners, has been found to increase learning for all learners (Cavalier & Klein, 1998; Webb & Palincsar, 1996). Two critical components that have been found to be integral in developing effective heterogeneous group activities are that there should be incentives for students to work together to help one another succeed and that there should be individual accountability, as students are evaluated on the learning that they accomplish individually (Dornyei, 1997).

Leming et al. (2003) and Berevino and Snodgrass (1998) confirm Foyle and Lyman's (1988) basic steps for successful implementation of small-group instruction. Firstly, teachers need to identify the content to be taught and the specific criteria for determining mastery. Secondly, the ideal group size is determined to ensure that individual accountability is part of the process for all team members. Groups should range in size from three to size participants, and students should be assigned to groups according to varied achievement levels, including one high- and one low-performing student (Hertz-Lazarowitz et al., 1992). Next, the classroom should be arranged, and expectations and tasks for small group instruction should be reviewed

with students. This includes the teacher reviewing individual and group accountability expectations and the identification of a timeline to ensure that students stay on task and work towards a goal. The teacher generates the initial material and then provides support and clarification to the groups as needed. The teacher is a guide who "explains, directs, models, redirects, facilitates, and evaluates" (Berevino & Snodgrass, 1998, p. 65). The teacher observes and questions students while walking from group to group and checks for understanding. At the conclusion of the task, it is recommended that a debrief be conducted, where each student demonstrates their mastery of the skill or concept learned (Berevino & Snodgrass, 1998). The debrief component can be evaluated using a variety of assessments, which include students answering questions from the teacher and peers, presenting a segment of material on their own to the class or other class members, or completing a quiz based on knowledge obtained in the group. Groups and individual team members should be rewarded for success by earning high grades, receiving verbal praise, and understanding the new material by achieving set goals.

There are also specific instructional techniques that teachers employ during small-group instruction. Some examples of small-group instructional techniques include Socratic seminars, discovery learning, problem-based learning, roundtable discussion, and think/pair sharing (Pedersen & Digby, 1995). Socratic seminars involve students engaging in a discussion on a topic in which they both pose questions and give responses to fellow peers, as well as the teacher. Discovery learning is a technique where students use material and information to construct meaning as a group, such as in projects, labs, or experiments. In problem-based learning, students work in a group on a problem, gather the data needed, organize the facts, attempt to find solutions, and analyze strategies used to generate responses. A roundtable discussion refers to when students brainstorm and review skills. Think/pair sharing is a peer

coaching technique where students are introduced to information and given time to think about the new concepts and knowledge, write down their thoughts, discuss their ideas with a fellow student, and work with a peer to develop conclusions or synthesize material.

Small-group instruction can be effective, as teaching is focused on differentiating the way in which the instruction is delivered to students. It provides opportunities for students to engage with one another and a teacher to provide remediation or scaffolding for a lesson to meet a learner's needs and helps the classroom focus on what students need to learn to move forward. Teachers may ensure that students have an equitable learning experience and are as successful as their peers in the classroom by using small-group instruction. Most studies have addressed the importance of small-group instruction on the elementary level. However, small-group instruction allows all students to learn at their own pace and at a level that they are comfortable with. Students who face academic deficits will continue to be at risk, have learning gaps, and miss opportunities to learn academic information in a meaningful way if they do not receive high-quality instruction. Therefore, small-group instruction is an intervention that can enhance student conversation and learning.

Khan Academy

Khan Academy, which was founded in 2006, is an American nonprofit online program that offers free online video lessons, supplementary practice exercises, and assessments on several different content areas. Khan Academy also incorporates game mechanics to promote student engagement. Its mission is to provide "a free world-class education for anyone, everywhere" (Khan Academy, n.d.). The website of Khan Academy attempts to deliver a tailored learning experience through videos, progress tracking, student practice exercises, and instructional tools. While Khan Academy was originally designed to provide individual students

with one-on-one online math tutoring, students can now learn at their own pace, focusing on skill mastery in math, reading, science, history, economics, art history, computing, or test preparation, including SAT practice. Thousands of instructional videos are accessible for viewing on the website, as well as practice problems with immediate feedback for students (Murphy et al., 2014). According to the 2018 ConStat U.S. Online Education Customer Survey found on the Khan Academy website (Khan Academy, 2022), more than any other online learning platform, Khan Academy is rated as an effective learning tool by 90% of teachers and students who have used it.

On the Khan Academy website, students create a profile and are presented with an individualized learning dashboard that breaks content down into specific skills. Math skills include anything from single digit addition to calculus. Skills can be organized by grade level or listed numerically. The website remembers what abilities the learner has worked on and mastered through the user profile and makes recommendations for what to work on next (Khan Academy, n.d.). The tasks that the students work on in each skill are generated at random by the computer. Mastery is defined as accurately answering 10 questions in a single power (Khan Academy, n.d.). The algorithm, however, waits 16 hours after the first five issues before presenting the next task to guarantee that the student has remembered the information over time.

Effects of Khan Academy on Mathematics Achievement

Since Khan Academy was originally developed as an online math support platform, limited research has been conducted on its effects on content areas other than mathematics. With the advancement of technology, research studies have suggested that computer-assisted learning can be an effective strategy in promoting student engagement in mathematics (Light & Pierson, 2014). In Light and Pierson's 2014 study, "Increasing Student Engagement in Math: The Use of

Khan Academy in Chilean Classrooms," the authors identified various advantages of incorporating Khan Academy in teaching mathematics. Light and Pierson concluded that the benefits of incorporating Khan Academy in the classroom include students becoming more engaged in math, self-regulated math learning becoming a motivator, students being encouraged to tutor each other, students working on tasks appropriate for their math level, students mastering more math skills, and students perceiving themselves as math learners (Light & Pierson, 2014).

Another research study conducted by Zengin (2017) determined the impact of implementing Khan Academy in a flipped classroom approach on student academic achievement. The findings indicated that the flipped classroom method and exposure to Khan Academy increased student academic achievement. The Khan Academy materials coupled with mathematics software was determined to be an effective approach for the flipped classroom model, as the findings demonstrated that students were better able to understand and visualize math concepts and retained the skills learned through the videos. Furthermore, the study revealed that students were more prepared for lessons, and students found math to be more enjoyable to learn (Zengin, 2017).

Implementing Khan Academy for Personalized Practice in the Classroom

Teacher guides are available on the Khan Academy website. When planning lessons, a teacher should consult sections of Khan Academy that directly align with the skills that they plan to teach in a given week. Next, the teacher should determine how to best incorporate the Khan Academy section to students. The section(s) can be assigned as independent practice after whole-group instruction, or teachers could even assign individual sections to each student during independent practice for differentiation or remediation based on the skills that each individual needs more support in (Light & Pierson, 2014).

Some students may be able to immediately work on the problem set assigned by the teacher, while other students may need additional support. In this case, students who need additional support should watch the supplemental video that is provided in the section being taught. When students complete a question set, they receive immediate feedback on whether their responses were correct or incorrect. The teacher should also encourage students to click the "I need a hint" button if they miss a question for additional support. The teacher can also monitor each student's activity from the coaching dashboard and intervene to support students as needed. Furthermore, a teacher can access a mastery progress report that shows the percentage of students who answered a particular question correctly, in helping understand student and class performance. The mastery progress report is updated after the end of each activity, which offers the teacher an opportunity to address misconceptions or the most missed questions on a problem set with students (Zengin, 2017).

Summary

As legislative influences began to impact the RtI model, a shift occurred in the paradigm to a more comprehensive framework known as an MTSS. An MTSS is a data-driven, prevention-based school framework for improving academic, behavior, and social-emotional outcomes for every student through evidence-based interventions and systems. Several components comprise the MTSS framework, which was discussed through universal screening, progress monitoring, tiered level supports, and data-based decision-making. Small-group instruction and Khan Academy are two critical instructional interventions that can support student engagement and minimize academic gaps in the classroom.

MTSS implementation in schools on the secondary level is imperative, as evidence shows a correlation between academic deficits in students' learning on the secondary level and high

school dropout rates. However, it is also important to recognize that since the MTSS framework is relatively novel, there are facets thereof that pose unique challenges that have in turn led to limitations in the current research. Factors that can improve MTSS implementation on the secondary level include teacher empowerment, professional development, and problem-solving early on with potential complexities within the framework with administrators, teachers, parents, and stakeholders of the community.

CHAPTER 3

METHODS

The purpose of this program evaluation was to examine teachers' perceptions of their current skills in implementing MTSS interventions, the factors that facilitate and the conditions that inhibit the implementation of the small-group instruction and Khan Academy interventions in the classroom, and the degree to which teachers report that they are using the small-group instruction and Khan Academy interventions in the classroom at PRIME High School. It focused on the process phase of the CIPP model to determine the degree to which the activities of the program have been implemented based on the perceptions of the participants. The findings of this study have provided information and recommendations to stakeholders, including the Director of MTSS for PRIME Preparatory Schools, the Student Services team, curriculum directors, the CEO, and the School Building Principal, with which to help develop MTSS programming on the high school level. To capture teachers' perceptions of the program, this program evaluation used a mixed methods design. It examined how well teachers carried out the activities outlined in the logic model, specifically with implementing small-group instruction and Khan Academy (Mertens & Wilson, 2012).

Participants

Two primary stakeholder groups were identified for this program evaluation based on their proximity to program activities. Participants for the evaluation were selected from each of the groups: all teachers and staff were invited to take the *Perceptions of Practices Survey*, and

only math, ELA, and world studies teachers were asked to participate in interviews. Prior to the pandemic, all core content teachers were required to provide small group-instruction and Khan Academy at least weekly in their classrooms. Most of the interview questions aligned with the degree that they are implementing interventions, as well as facilitating factors and inhibiting conditions to implementing small-group instruction and Khan Academy. For the other core and elective teachers, it is not required that the small-group instruction and Khan Academy interventions be provided in the classroom; however, they are recommended. In addition, passing rates are generally 90% or higher for these courses at PRIME High School. Therefore, it was appropriate for these teachers to participate only in the survey portion of the study, as their feedback was also critical to this evaluation.

All Teachers Were Asked to Participate in the Survey Portion

The teachers at PRIME High School consist of the Math Department, World Studies Department, English Language Arts Department, Science Department, Electives Department, English Language Development Specialists, and Special Education Teachers. These departments comprise a total of 50 teachers to whom the use of apply Tier 1 instructional strategies, which include small-group instruction and the use of Khan Academy, has been recommended. However, IIT is not scheduled in all of these courses during class time, so elective teachers, science teachers, and other specialists are not required to implement interventions (with the exception of unique cases where the grade level team/department team determines that a specific student needs an intervention, which is done on a case-by-case basis). Therefore, all teachers were asked to participate in the survey portion of the study, and only teachers who are required to provide IIT (math, ELA, and world studies teachers) were additionally included in the interview

portion of the evaluation. Of the 50 teachers at PRIME High School, a total of 34 teachers participated in the survey.

Math, World Studies, and ELA Teachers to Participate in the Interviews

A total of 15 teachers were invited to participate in the interview portion of the study. The participants for this study included seven math, four world studies, and four ELA teachers from PRIME High School. All the math and ELA teachers were selected because their classes are double blocked and should include daily 25–30 minutes daily of IIT in each class period. IIT refers to when teachers are expected to assign students problem in Khan Academy and/or work with certain students in small groups that require additional remediation on a skill.

All of the world studies teachers were selected, as they have weekly double-blocked periods and should be identifying daily misconceptions in their lessons and addressing such misconceptions through active monitoring in small-group instruction or assigning passages and question sets in Khan Academy. As part of the program, it is anticipated that each of these teachers are implementing small-group instruction and the use of Khan Academy in the classroom. Essentially, all 15 of these teachers should be implementing Tier 1 academic interventions in their classrooms on a daily basis.

The 15 teachers selected to participate in this program represent a diverse range of teaching experience. Four of these teachers have taught in the classroom for 10 or more years. Nine of them have taught for 5 or more years, and two are in their first year of teaching. Six of the teachers are males, and nine are females. Thirteen of these teachers hold master’s level-professional licenses. Many of the participants are also teacher leaders within the school, which adds to the group's experience. Three of the teachers serve as the chairs of their departments, and

one was a member of the leadership team at her previous school in the same district. Figures 3-5 includes the demographics of the participants in this study.

Figure 3

Gender of Participants at PRIME High School

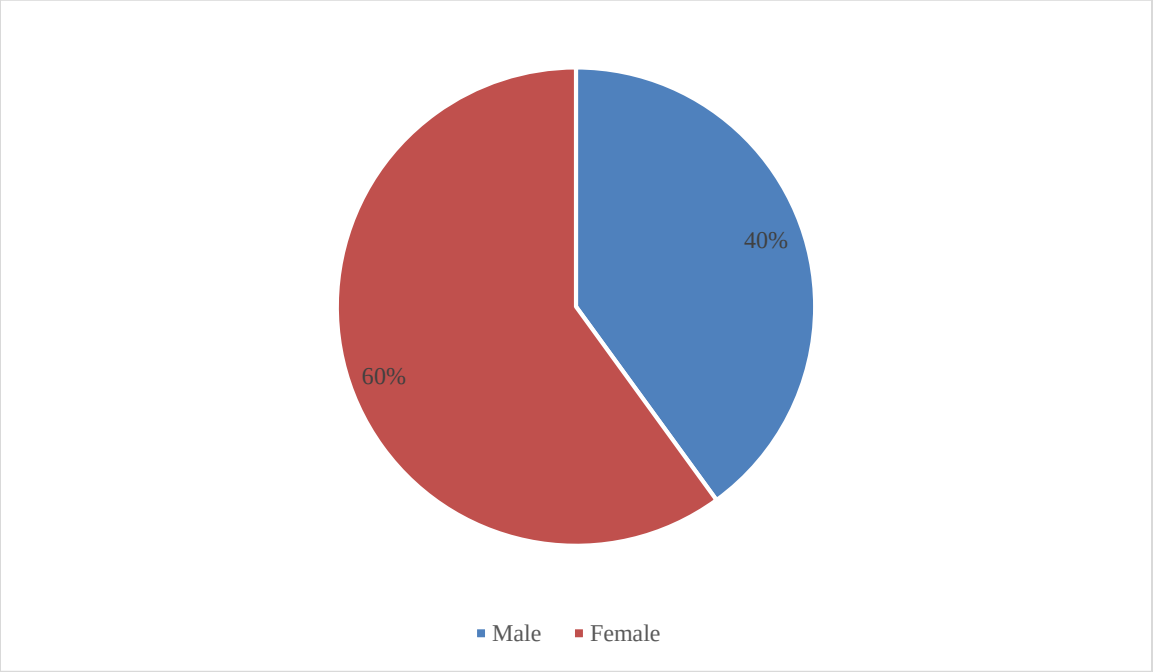


Figure 4

Teachers' Level of Education

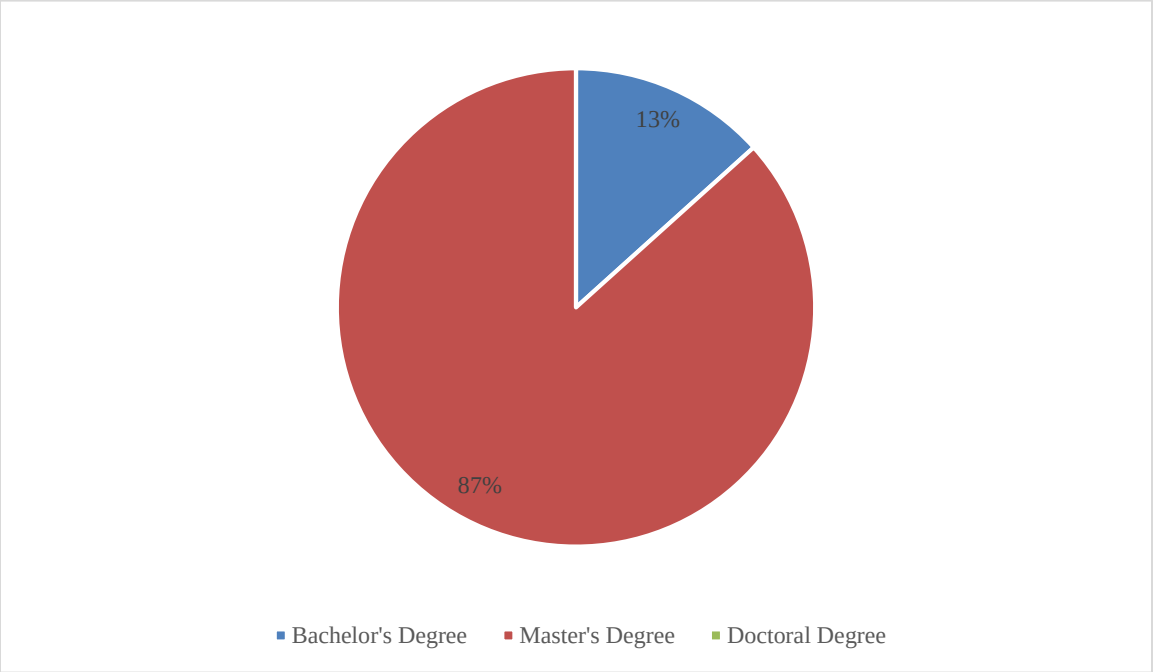
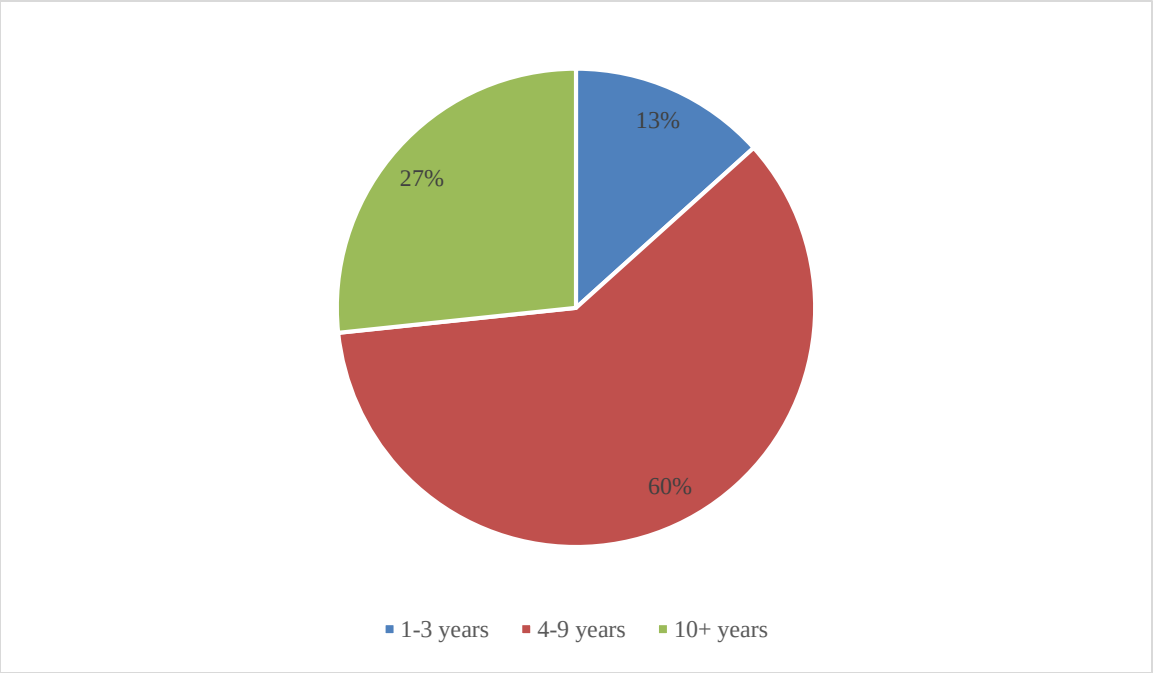


Figure 5

Teachers' Years of Experience



Data Sources

Data sources refer to the integral instruments and information collected and analyzed for the study. Table 2 outlines the evaluation questions and their corresponding data sources, data collection, and data analysis for the study.

Table 2

Analysis Methods for Evaluation Questions

Evaluation Question	Data Source	Data Collection	Data Analysis
1. To what degree do teachers perceive they have the skills required to implement Tier 1 interventions?	Perceptions of Practices Survey, individual teacher interviews	Perceptions of Practices Survey	Quantitative analysis; descriptive statistics; mean ratings provided
2. To what extent do teachers report that they are using small-group instruction and Khan Academy in the classroom?	Individual teacher interviews	Individual teacher interviews	Qualitative Analysis and Interpretation
3. What are the factors that facilitate and conditions that inhibit the implementation of Tier 1 interventions (small-group instruction and Khan Academy) of MTSS at PRIME High School?	Perceptions of Practices Survey, individual teacher interviews	Perceptions of Practices Survey, individual teacher interviews	Qualitative Analysis and Interpretation

Teachers of Perceptions of Practices Survey

Teacher input is an important factor in assessing the MTSS programming at the school building level, as teachers directly serve and instruct students. The *Perceptions of Practices Survey* (Appendix B) was developed by the Florida Department of Education and the University of South Florida. The survey tool is part of the *Problem Solving/Response to Intervention Evaluation Tool Technical Assistance Manual* (Batsche et al., 2006). It is a self-report measure developed to evaluate teachers and school leaders' perceptions of the degree to which their respective teams have implemented problem-solving/RtI practices. The *Perceptions of Practices*

Survey features 22 questions that assess educators' perceptions of the practices employed in school in three main domains. The three domains that the instrument examines are academic content, behavior content, and data manipulation and technology skills. Specific examples of skills assessed in the survey include using student data to make informed instructional decisions regarding academics and behavioral interventions, implementing the problem-solving process when faced with student concerns, and utilizing technology to monitor student progress. For each question on the survey, educators select from 1–5 range, where 1 is selected if the educator does not have the skill at all, and 5 is selected if the educator is highly skilled in the area.

There are two major purposes of the instrument. Firstly, it measures the impact of professional development training on staff's perceptions of the data-based decision-making skills that they believe to have. Secondly, assessing staff's beliefs with RtI practices can inform staff training needs and thus support development in terms of problem-solving/data-based decision-making interventions (Batsche et al., 2006). Additionally, the *Perceptions of Practices Survey* can be used as an indicator of a classroom implementation of problem-solving/RtI practices.

Prior to the administration of the *Perceptions of Practices Survey*, the school building Assistant Principal of Instruction explained why the survey was being administered and why the information obtained would be important to both the school and district. The staff of the Florida Problem-Solving/RtI Project have discovered that having a school leader explain the need of gathering this data can lead to more full and accurate information being returned by their personnel (Batsche et al., 2006). As a result, I gave employees a summary of the survey, explained why the data was being collected and how it would be utilized, and gave precise directions for filling out the instrument.

The *Perceptions of Practices Survey* is grounded in content validity (Batsche et al., 2006). The team consulted relevant literature, instruments, and presentations to create a survey that is representative of critical problem-solving/RtI practices. An initial draft of the instrument was shared with an Educational Validation Panel comprised of educators from various disciplines who had foundational knowledge in problem-solving/RtI for review. The Educational Validation Panel provided feedback on recommended modifications, the quality of the questions in the instrument, and the breadth of the practices covered by the survey prior to the final version being drafted (Batsche et al., 2006).

For the internal consistency reliability for the *Perceptions of Practices Survey*, was determined based on the extent to which scores for questions assessing the same domain cluster together (Batsche et al., 2006). The internal consistency reliability estimate for the survey provides an indication of the extent to which respondents answered one question measuring a domain similarly to other questions measuring the same domain.

The internal consistency reliability estimates for academic content and behavior content were measured by Cronbach's alpha. The evaluator only focused on the academic content for the survey. Below are the two domains and their reliability estimates:

- Factor 1 (perceptions of RtI practices applied to academic content): $\alpha = .97$
- Factor 2 (perceptions of RtI practices applied to behavior content): $\alpha = .96$

Both of these factors surpass the .70 threshold.

Teacher Interviews

Structured individual teacher interviews were conducted with ELA, math, and world studies teachers after the survey to gather information about teachers' perceptions of their skills

in terms of implementing Tier 1 interventions, the extent to which they are using small-group instruction and Khan Academy in the classroom, and their perceptions of the facilitating and inhibiting conditions to implementing Tier 1 interventions. Fifteen teachers participated in the interviews.

The question protocol for the interviews included open-ended questions aligned with the specific evaluation questions and the literature review on small-group instruction, the use of Khan Academy, and essential components of an MTSS. An efficient questioning approach is characterized by three categories of inquiries, which are listed in the following sequence:

1. Opening questions—Open dialog and make people feel comfortable.
2. Key questions—Focus on the major areas of the evaluation.
3. Ending questions—Bring closure to the interview, but also provide for issues to be raised that were not explicitly asked for (Rennekamp & Nall, 2002).

The logical, natural flow of questions was supported by the specific teacher questioning approach, which allowed for optimum time spent on crucial questions. The majority of the main questions in the teacher-questioning route corresponded to the evaluation questions, while others corresponded to survey questions from the *Perceptions of Practices Survey*. Table 3 lists the many types of questions that can be found throughout the questioning path, as well as the alignment between individual teacher interview questions and evaluation questions.

Table 3

Alignment of Teacher Interview Questions, Evaluation Questions, and Tier I Instruction

Individual Teacher Interview Questions	QT	EQ	Tier I Alignment
How long have you been teaching, and how long have you taught at PRIME High School?	O	1	
What, in your mind, are the goals of MTSS?	K	1	DC/PM
Can you describe the screening process that you use to identify students who need extra help?	K	1	DC/PM
Approximately how often during a week of instruction do you implement small-group instruction and for how long? **b) Walk me through how you determine your small groups.** **c) How do you implement small-group instruction overall?** **d) What is challenging about implementing small-group instruction?** **e) What supports the implementation?** **f) What type of data do you use to progress monitor students' performance during small-group instruction?**	K	2	SGI, DC/PM
Approximately how often a week do you implement Khan Academy and for how long a class period? **b) How do you use Khan Academy in the classroom?** **c) What is challenging about implementing Khan Academy?** **d) What supports implementation?** **e) What type of data do you use to progress monitor students' performance during an assigned Khan Academy skill?**	K	2, 3	KA
What type of support do you need with MTSS?	K	1, 3	DC/, SGI, KA
Is there anything else we should have talked about but didn't?	E	1, 2, 3	

Note. O= Opening question; K = Key question; E = Ending question; QT= Question type; EQ= Evaluation Question; DC= Data Collection; PM= Progress Monitoring; KA= Khan Academy; SGI= Small-group instruction;

These questions were derived from alignment to aspects of Tier 1 intervention at PRIME High School, specifically with the small-group instruction intervention, the Khan Academy intervention, IIT, and method of data collection. A panel of experts from the central office (the Director of Student Services and the Senior Director of Data and Assessment) were provided with the questions, and they all provided feedback for improvement. To this end, the evaluator conducted individual teacher interviews to elicit multiple meanings from participants and to build a deeper understanding than that which could be established based on the survey alone.

Data Collection

Both data sources have a set of guidelines for data gathering, which are explained in the subsections below. Prior to the start of the data collecting procedure, all data collection instruments were sent to PRIME Preparatory School's Central Office for review.

Teachers of Perceptions of Practices Survey

Approximately 50 staff members at PRIME High School received a web-based survey via email. The survey was open to all members within the group. The survey and letter of invitation were included in the email, explain the purposes of the survey. Consent for participation and a pledge of anonymity were included in a disclosure statement in the instructions portion of the survey due to the large sample size of this set of respondents (see Appendix B). The survey window was open for approximately two weeks.

Individual Teacher Interviews

After the survey data had been collected, the evaluator conducted 15 individual Zoom interviews with each of the math, world studies, and ELA teachers at PRIME High School. These

interviews focused on the teachers' perceptions of implementing Tier 1 interventions, the degree to which they are using small-group instruction and Khan Academy in the classroom, and the factors that serve to facilitate and inhibit the implementation of Tier 1 interventions. Each teacher was interviewed once, resulting in 15 different interviews. The teachers being interviewed provided a variety of perspectives based on their different years of experience, degree levels, grade levels taught, and different classroom assignments. These individuals in turn each provided a unique perspective on the MTSS programming regarding both its strengths and areas of improvement.

A one-on-one in-depth interview format was used. Due to the COVID-19 pandemic and hybrid learning in the fall, I had to conduct the one-on-one interviews with each teacher through Zoom video calls outside of normal school hours. Each interview took approximately 45–60 minutes, and all interviews were recorded. The purpose of an in-depth interview is to "hear what the participant has to say in his or her own words, in his or her own voice, with his or her own language and narrative" (Lichtman, 2006, p. 45). Utilizing a predetermined list of questions for the interviews ensured that there would be reliability the methods used and that all questions would be asked during the course of the interviews (Lichtman, 2006).

During each interview, I asked probing questions to obtain additional clarification or to gain a deeper understanding of the answers provided by the participants. Examples of probing questions included "Can you provide me an example of…" or "Can you describe…" Lichtman (2006) described this as focus or obtaining the data or depth necessary to make the "picture" clear. All interviews were audio recorded using Zoom and transcribed for analysis by a professional transcription service. After each interview, I recorded any thoughts, insights,

observations, or reactions that arose, as these provided me with a means to capture the situation and recall it at a later time (Lichtman, 2006).

Data Analysis

Together, the two data sources provided the qualitative and quantitative data for analysis.

Evaluation Question 1

For Question 1, I analyzed survey responses to questions in the academic domain. The Florida Problem-Solving/RtI Project utilizes two techniques for analyzing survey responses for evaluation purposes. For the purpose of this study, I analyzed the average perceived skill by calculating the mean rating for each item that fell in the academic domain. The capacity to study general trends in perceived skills applied to academic content and the ability to display data was made possible by determining the perceived skill at the domain level. A domain score for the academic domain measured by the instrument was computed for each respondent by calculating the sum of the ratings of the items that comprise the domain. Data sources used in this portion of the study included the disaggregation of teachers' responses to each question in the academic domain of the *Perceptions of Practices Survey* using descriptive statistics. The average, count, and standard deviation for each survey question were analyzed for this quantitative data point. I used Microsoft Excel to find the average, count, and standard deviation for each question. I did this by entering all the scores from the survey in a spreadsheet, and using the functions tab and choosing the average, mode, and STDEV.S functions from the statistical category. After doing these functions, I entered the cell range for my list of data in the first column, which provided the average for each cell I selected.

I presented my findings with the survey through a visual analysis of the academic content domain. Using this approach, I was able to present the data graphically when I calculated the

respondents' average perceived skills within each item in the academic domain. In addition, I took note of the percent of teachers who reported 1–5 in the academic domain; whether being very highly skilled, highly skilled, having the skill but need support to use it, having minimal skills, or not having the skill at all in each item related to the academic domain. This helped provide a visual of the extent that teachers reported the skills they possess and/or lack.

Evaluation Questions 2 and 3

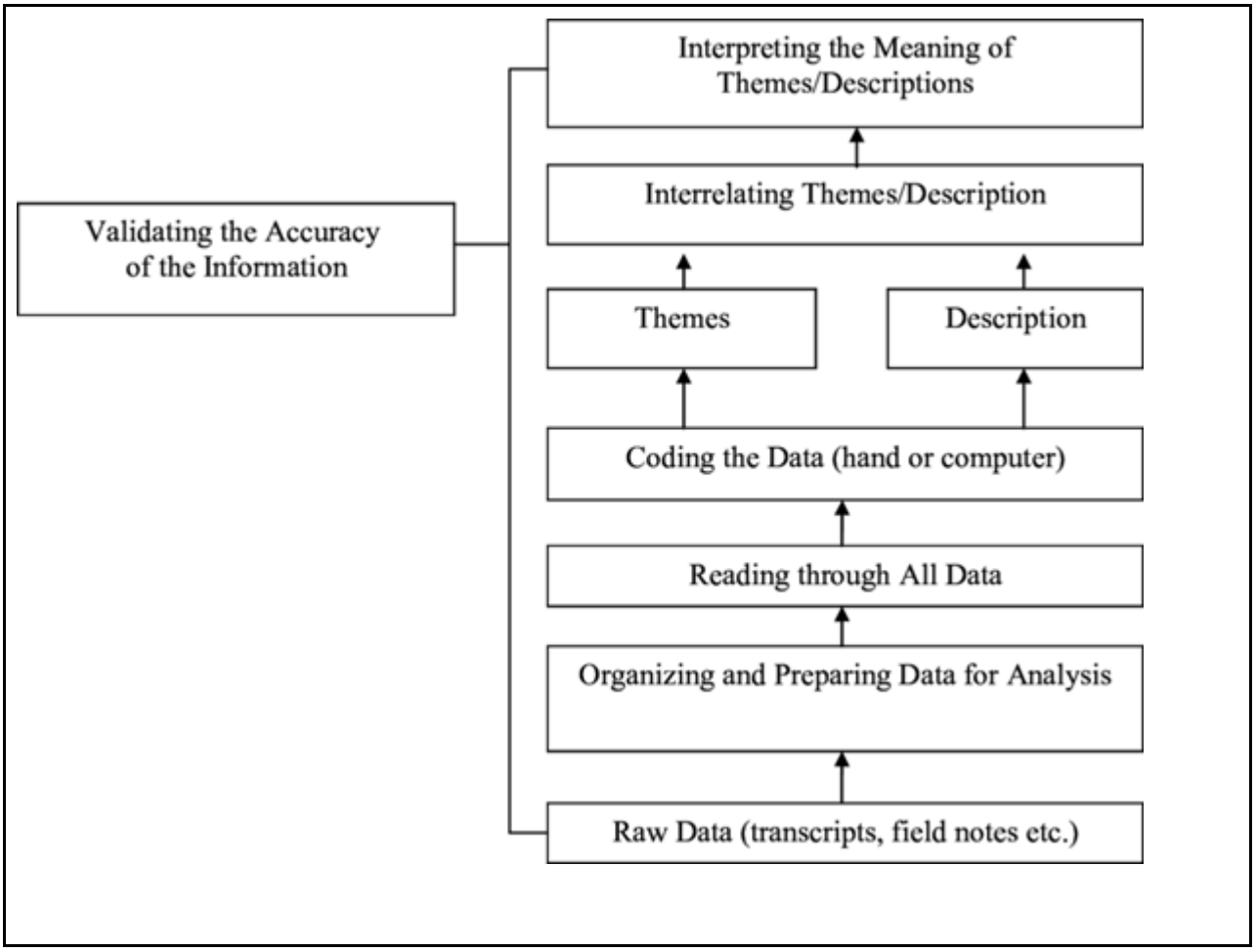
For Questions 2 and 3, I analyzed the individual teacher interviews through inductive data analysis. The inductive process included Creswell's (2014) six steps of data analysis, which allows for emergent codes.

In Step 1, I hired a transcriber who organized and prepared the data for analysis using a perspectives held by subjects coding process to transcribe and organize the individual interviews. In Step 2, I read through all the data, which involved reflecting on their overall meaning. I attempted to identify general ideas and took notes in the margins of transcripts. In Step 3, I began coding all of the data using an eight-step process provided by Creswell (2014). The process included reading all the transcripts to obtain an understanding of the interviews, selecting one unique interview and writing my thoughts about it, making a list of all topics from each interview and forming columns with the topics, abbreviating the topics as codes, finding the most descriptive wording from my topics and turning them into categories, abbreviating each category, assembling the data material belonging to each category in one place, and recoding my existing data (Creswell, 2014). Step 4 involved using the coding method to create a description of the place or people, as well as categories or topics to analyze. Step 5 involved a discussion of the themes and multiple perspectives from individuals. In Step 6, I interpreted the findings and results. This included the interpretation of participants in the study, and new questions that

needed to be raised by the data and analysis that I had not anticipated previously. The six steps are listed in Figure 6.

Figure 6

Qualitative Data Analysis: Creswell's (2014) Six Steps of Data Analysis



I transcribed each Zoom interview in order to perform the first cycle of coding known as in vivo coding, which is a form of qualitative data analysis that places the emphasis on the actual words spoken by the participants. In vivo coding is a well-known coding method where each code refers to a phrase used by the interviewee in the language used in the transcript (Saldaña, 2021). This approach allows a researcher to "deepen their understanding of a participant's

discourse, culture, and worldviews" (Saldaña, 2021, p. 138). Saldaña (2021) further stated that in vivo coding is a highly suitable approach for beginner qualitative researchers working with interview transcript data.

Through this method of coding, I could hear what each participant had to say in their own words and in their own narratives. This method ensured that the lived experiences of the interviewees emerged via the coding. In addition, the codes that emerged enabled me to extract themes from the narratives. I applied the codes consistently across the data set, which enabled me to develop categories and themes in my analysis. I created individual Microsoft Excel spreadsheets for each interview, which allowed me to summarize and manage the data during my thematic analysis.

The first step was to go through each transcript to find meaning from the text. I was able to create topics from the meaning of the text by manually coding in Microsoft Word, using the comments function under the review tab. By means of the comments function, I labeled sections of text with the emerging codes. Saldaña (2021) stated that "key writers of grounded theory advocate meticulous work and that in vivo code should appear next to every line of data" (p. 139). Therefore, I initially coded line by line. I then extracted the codes for each participant by the code, page and line number of the transcription, and the comment scope. Once I completed coding of transcripts, I extracted all the comments and related sections of text and captured them in a new Word document. The macro extracts these per transcript, page, and line. These extracted codes were then imported from the new Word document into an Excel file, which can be used to sort and filter the codes for ease of analysis. The process described above helped me to identify common codes in the words used by each interviewee, which I could then organize in alphabetical order in the Excel document. This allowed me to cluster more condensed categories

and themes, a process known as “pattern coding” (Saldaña, 2021), which was my second cycle of coding. I was then able to color-code, which helped me analyze the commonality in similar codes and capture the theme holistically (Saldaña, 2021).

Through using these data analysis steps and the two-step coding process, I was able to identify common themes and patterns that reflect characteristics that teachers value and require in their own learning. Inconsistencies and variances in the emerging themes were also apparent to me. Direct quotes and snippets from all sources of data that supported my conclusions served as evidence of teacher perceptions. In terms of strengthening their knowledge of classroom instruction procedures, I was able to determine the elements that teachers found important and successful.

Delimitations, Limitations, Assumptions

Delimitations

The scope of this program evaluation was limited to a specific MTSS program in a single high school in the state of Colorado. This was done on purpose in order to make specific programmatic decisions based on the findings of this study. It may be difficult to apply this research to other contexts since many mitigating circumstances may cause other groups to be vastly different from the ones studied in this study. The data sets for the data sources are also delimiting, as the sample size for the survey was only provided to 50 staff members at one specific high school, and the 15 teachers selected to be interviewed all work at the same high school.

Limitations

Self-report surveys may produce results that are skewed. The length of the study may also be a hindrance; for example, the Florida RtI/Problem Solving Project (Castillo et al., 2011) discovered a large number of non-responders in the Perceptions of RtI/MTSS Practices survey. Non-responders and incomplete questionnaires were also restrictions, as were respondents who were personally associated with the interviewer due to the latter's school leadership post at PRIME High School.

Assumptions

The surveys did not elicit responses from all of the teachers whom the evaluator sent it to. However, it was assumed that respondents would provide honest and truthful feedback to the evaluator based on the survey questions. In addition, I assumed that teachers already had the skills required to implement Tier 1 interventions, namely small-group instruction and the use of Khan Academy, in the classroom.

Ethical Considerations

One of the major principles of this study was protecting the participants who engaged in this work. Several safeguards were put in place to preserve the participants' safety, anonymity, and confidentiality. The propriety, utility, feasibility, and accuracy standards stated in *The Program Evaluation Standards* were followed in this study (Joint Committee on Standards for Excellence in Educational Evaluation, 2011).

Propriety

The goal of the study, the selection criteria for participants, and the potential benefits of participation were all included in the letters inviting people to participate in the *Perceptions of Practices Survey* and interviews. The same information was included in the survey's introduction

section. All participants in the survey and interview sessions were also given a letter of consent (see Appendix C). In the initial portion, a consent disclaimer for survey participants was added. When necessary, pseudonyms were used to identify program participants during the data collection, analysis, and reporting phases.

Roles as the Evaluator

In this study, I served in a number of different capacities:

1. as the facilitator of the evaluation,
2. as the facilitator of the individual teacher interviews and survey protocol,
3. as the developer of the interview protocol and questions.

As a school building leader who is part of the MTSS Committee at PRIME High School, I was personally invested in the outcomes of the study, and the program evaluation's ability to advise PRIME Prep on further professional development, training, and supports that would help our students make better academic and instructional decisions. As the research's evaluator, I accept that my experience as a school building administrator may have influenced the respondents' honesty and veracity, particularly in the face-to-face Zoom setting. To that end, as a leader, I continued to encourage open and honest communication from people I serve.

To mitigate bias, I used member checking to ensure the accuracy of the findings by presenting the themes and data from the interviews to the teacher participants to determine whether the teachers felt that the emerging themes were accurate. In addition, I used our network's senior director of data and assessment as a peer in debriefing the accuracy of the study. This peer reviewer reviewed and assessed transcripts, emerging themes, and asked questions regarding the final analysis. Involving an interpretation beyond me adds trustworthiness to the findings (Creswell, 2014).

Utility

The overarching goal of this study was to produce evidence-based results that could be used to inform future programming decisions that would support the MTSS program's continued growth and, more importantly, the academic development of students served by PRIME Preparatory Schools. The evaluation was created to engage participants in a variety of ways. Individual teacher interviews were included expressly to encourage participants to explore the program's beneficial aspects and to consider the possibilities for what the MTSS program could become.

Feasibility

Efforts were taken to support the evaluation's practical implementation. Scheduling interviews during teacher's planning periods, and individual teacher interview sessions were conducted via Zoom. The surveys were made available to participants in a web-based format for simplicity of use.

Accuracy

In order to produce reliable results, I used two data sources during the process. I worked hard to present the study's results, findings, and recommendations in a clear, consistent, and accurate manner.

Research Approval

By completing the relevant online training modules and application process in accordance with the Board's guidelines, I was able to obtain acceptable approval from the College of William and Mary Institutional Review Board. I provided PRIME Preparatory Schools with an executive summary of my dissertation proposal, and the proposal had been approved by the central office academic team.

CHAPTER 4

FINDINGS

The purpose of this mixed-methods study was to gain an understanding of PRIME High School teachers and staff members' perceptions of the implementation of Tier 1 Multi-tiered System of Supports (MTSS) interventions and the factors or conditions that either facilitate or inhibit such implementation, focusing on the implementation of small-group instruction and Khan Academy. The findings reported in this chapter are the results of the analysis of the data collected via the *Perceptions of Practices Survey* (Batsche et al., 2006) and the teacher interviews. This section is structured according to summary findings for each evaluation question.

Three questions guided this study:

1. To what degree do teachers perceive they have the skills required to implement Tier 1 interventions?
2. To what extent do teachers report that they are using small-group instruction and Khan Academy in the classroom?
3. What are the factors that facilitate and conditions that inhibit the implementation of Tier 1 MTSS interventions (small-group instruction and Khan Academy) at PRIME High School?

Summary Findings for Study

Evaluation Question 1

To what degree do teachers perceive they have the skills required to implement Tier 1 interventions?

Question 1 of this study focused on the degree to which teachers feel they have the skills required to implement Tier 1 interventions. Thirty-four of 50 teachers and staff members participated in the Perceptions of Response to Intervention (RtI) Skills Survey. The survey findings indicated how teachers and staff members perceived their skillset in terms of data-based problem-solving approaches and their experiences using such approaches. Twenty-two questions from the survey focused on the participants' perceptions of RtI/MTSS practices applied to academic content. The following 5-point scale was implemented for the survey:

1) = I do not have this skill at all. No skill (NS).

2) = I have minimal skills in this area; need substantial support to use it. Minimal skill (MnS).

3) = I have this skill, but still need some support to use it. Some skill (SS).

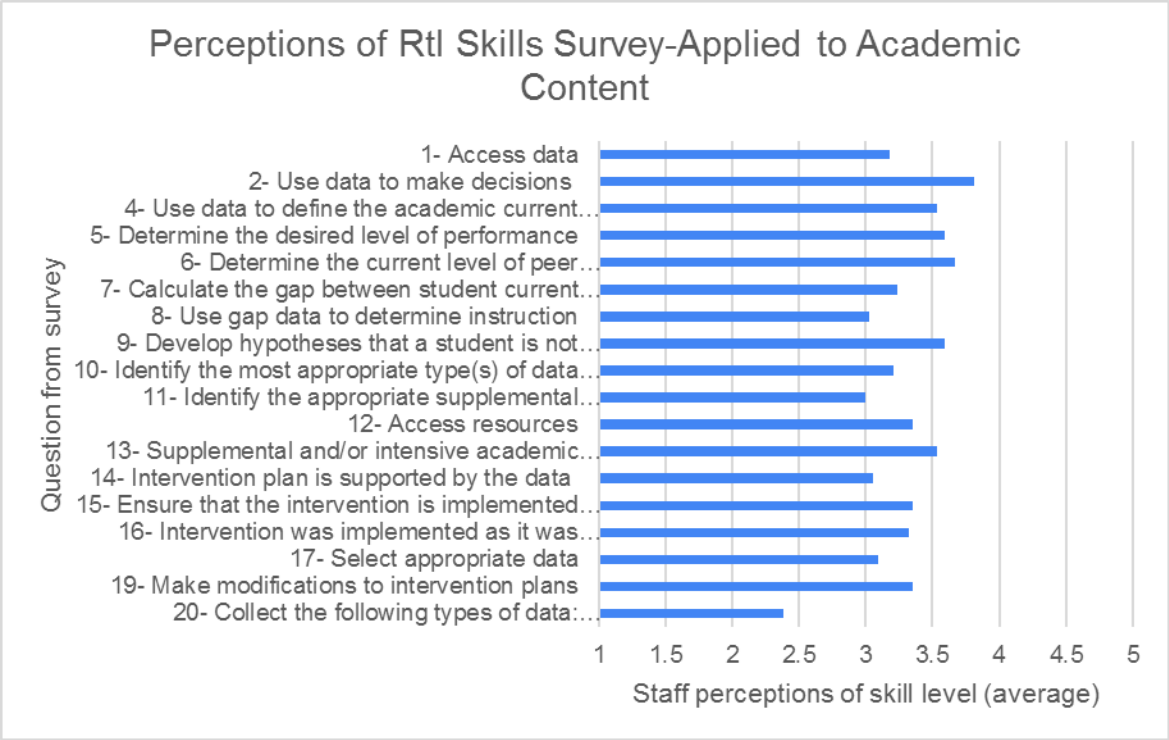
4) = I can use this skill with little support. Highly skilled (HS).

5) = I am highly skilled in this area and could teach others this skill. Very highly skilled (VHS).

The results indicated an aggregate mean score of 3.28 on a 5-point scale across all questions. This score falls in the "3" range, which means that teachers and staff members are of the view that they have the required skills but need support implementing them. Additionally, 21 question items had an overall average of 3.0 or higher, with the exception of one question, which had an average score of 2.38. Figure 7 shows the overall average for each question item in the survey's academic domain, while Table 4 provides details for each question item by the number of respondents for each question on the survey (count), staff members' overall average for each question item in the academic domain, and the standard deviation of each question item in chronological order.

Figure 7

Perceptions of RtI Skills Survey–Applied to Academic Content



Note. RtI = Response to Intervention.

Table 4

Perceptions of RtI Skills Survey–Question Item Data

Question	Descriptor	*f*	*M*	*SD*
1	Access data	33	3.18	1.10
2	Use data to make decisions	32	3.81	0.99
4	Academic level of performance	34	3.52	0.96
5	Desired level of performance	34	3.58	0.95
6	Current level of performance	33	3.66	1.05
7	Student current performance and the benchmark	34	3.23	1.18
8	Use gap data to determine instruction	34	3.02	0.99
9	Develop hypotheses that a student is not achieving	34	3.58	0.89
10	Identify the most appropriate type(s) of data to use	34	3.20	1.00
11	Identify the appropriate supplemental intervention	33	3.00	1.11
12	Access resources	34	3.35	1.06
13	Supplemental and/or intensive academic interventions	34	3.52	0.96
14	Intervention plan is supported by the data	34	3.05	1.12
15	Ensure that the intervention is implemented appropriately	33	3.35	0.91
16	Intervention was implemented as it was intended	34	3.32	0.91
17	Select appropriate data	33	3.09	1.23
19	Make modifications to intervention plans	32	3.35	1.01
20	Collect different types of data	34	2.38	1.01

Note. RtI = Response to Intervention; *f* = Frequency; *M* = Mean; *SD* = Standard Deviation.

The results indicate that the staff ascribed the highest rating to their ability to use data to make decisions concerning individuals and groups of students for the core academic curriculum

(*M* = 3.81, *SD* =.99). The skill that received the second-highest average rating was the ability to determine the current level of peer performance for the same academic skill as the target student (*M* = 3.66, *SD* =1.05). There was a tie for third, which included the ability to determine the desired level of performance (i.e., benchmark) for academics and the ability to identify potential reasons (hypotheses) why a student or group of students are not achieving the desired levels of academic performance (*M = 3.58, SD =.95, M= 3.58, SD=.89*; i.e., benchmarks).

At the other end of the spectrum, the results indicated that the staff gave three skills the lowest ratings:

1. Collect the following types of data: curriculum-based measurement, DIBELS, access data from appropriate district-wide or school-wide assessments (*M* = 2.38, *SD* =1.01).
2. Identify the appropriate supplemental intervention available in my building for a student identified as at risk for academics (*M* = 3.0, *SD* =1.11).
3. Use gap data to determine whether core instruction should be adjusted or whether supplemental instruction should be directed to the target student for academics *(M* = 3.02, *SD* =.99)

In summary, the *Perceptions of Practices Survey* findings indicate that teachers and staff at PRIME High School perceive themselves as needing support in using data to make instructional decisions and in determining which students are or are not meeting the desired academic outcomes. In contrast, teachers and staff perceived themselves as having minimal skills in terms of collecting different types of data and needing substantial additional support in this area. In addition, it was the overall perception of staff that they need support in identifying the appropriate academic interventions that are available in the building and using gap data to determine whether core instruction should be adjusted.

Evaluation Question 2

To what extent do teachers report that they are using small-group instruction and Khan Academy in the classroom?

The findings indicated that all of the 15 teachers interviewed had implemented small-group instruction in their classroom on a weekly basis, regardless of whether they were teaching in-person or in the remote setting. Two of the teachers had implemented small-group instruction once a week, five of the teachers 3 times a week, six of the teachers 4 times a week, and two of the teachers 5 days a week (i.e., every day). Nearly half of the interviewed teachers indicated that they had implemented small-group instruction for 20–30 minutes per session, while five teachers indicated 15–20 minutes per session, and two teachers indicated 10–15 minutes per session. Only one teacher indicated that they had implemented small-group instruction for more than 30 minutes each session. Table 5 summarizes the frequency with which teachers had implemented small-group instruction weekly and the time per session.

Table 5

Frequency of Small-Group Instruction

Teacher Count	Frequency/week	Minutes/session
1	5	20–30
1	5	15–20
4	4	20–30
2	4	15–20
1	3	15–20
1	3	10–15
2	3	20–30
1	3	40–60
1	1	15–20
1	1	10–15

Theme 1. *Teachers primarily used informal student data to determine their small groups for small-group instruction.* All 15 interviewed teachers indicated that they used student data to determine their small groups. The analysis and coding of the notes revealed that 12 of the 15 teachers analyzed previous lessons' exit-ticket data to determine their small groups for the following day's classes. The following quotes illustrate teachers' use of data to determine small groups:

> *The data could be taken from like an exit ticket from the day before that I need to reteach.*
>
> *The next layer of it is exit-ticket data, getting that data at the end of the session and being able to see, okay, even though they answered all the questions today, they still have some misconceptions, so they need a small group.*
>
> *I would primarily look at the exit ticket, because the exit ticket is going to focus on what we covered for that particular day.*
>
> *Mostly exit-ticket data or assessment data, whether it's my own internal assessment, like my own classroom assessment, or a bigger one from the district or, like I said, PSAT, more of a statewide kind of test.*
>
> *I also use my "Do Nows" and exit tickets. IXL is really great for data from remedial skills from previous courses, but my "Do Nows" and exit tickets are related to my grade-level content.*

Eleven of the 15 teachers also indicated that they analyzed assessment data to determine their small groups. Evidence coded from the interviews suggest that classroom-based assessments are the most common testing data that teachers analyze when determining their groups for small-group instruction (all 11 teachers indicated that they use classroom-based assessments).

Theme 2. *Teachers are implementing small-group instruction during individualized instructional time or during independent practice***.** IIT is an intervention that has been incorporated into Grade 6–11 math and ELA courses for all PRIME Prep students. The purpose of IIT is to reach and exceed the rigor of grade-level common core standards and help students close any skill gaps. IIT is designed to use

student performance and growth data to be both individualized and targeted by leveraging explicit intervention program materials and technology, co-teachers, and delivery of instruction. The academic team at PRIME Prep schools has instructed teachers to implement stations/small-group instruction, the use of Khan Academy, and/or IXL instruction as recommended strategies to provide access to content and skill development not covered in the core curriculum. For general education teachers, the goal of IIT is to provide all students with personalized support, further differentiation and scaffolding, and acceleration.

All four of the ELA teachers indicated that they had implemented small-group instruction during IIT, while six of the seven math teachers indicated that they had implemented small-group instruction during IIT. The one individual who had not implemented small-group instruction during IIT was a Grade 12 math teacher; teachers at this level are not required by PRIME Prep to implement IIT. The 10 remaining math and ELA teacher participants indicated that they were providing IIT for 10–15 minutes at least 3 times a week.

Due to changes in scheduling brought about by the hybrid setting between in-person learning and remote learning, only math and ELA teachers were required to provide a minimum of 10–15 minutes of IIT at least 3 times a week for the 2020–2021 school year. Other than the one math teacher, all four world studies teacher participants were implementing their small-group instruction during independent practice. All teachers were using breakout rooms on the Zoom platform as a strategy for small-group instruction in the remote setting.

Theme 3. *Teachers are focusing on remediating students on a specific skill and/or standard during small-group instruction*. The analysis of my coding revealed that the teachers were primarily using small-group instruction as an opportunity to provide students with additional support for a specific standard, skill, or the curriculum. The teachers indicated that they were targeting and reviewing missed questions, concepts, or skills during small-group instruction to provide students who were receiving such instruction with additional support and time to work on the relevant question, concept, or skill. The quotes below provide examples of how teachers described providing additional support:

Since I can see that spreadsheet, I can then quickly pull out certain scholars based on what they're answering incorrectly to support those concepts.

I might use those paragraphs to pick out a group of scholars whose claims are just not there, whether it's because the writing is unclear or the understanding of the text is unclear, and then that would create a small group.

Explain how they solved the problem, maybe listing out the steps, taking a deeper conceptual dive into one problem. And that would be for the group that I work with, specifically, that needs the most help.

And so the group that struggled the most—maybe it's a group of kids who've gotten none of them right—we might spend a 20-minute session on one, maybe two, questions, and really walk through it, really practice.

I might want to go over a quiz and I see this handful of kids don't understand question number 5, which is about solving equations with variables on both sides, so I would pull them out. I would reteach that.

Theme 4. *Teachers performed in-the-moment informal checks for understanding when progress monitoring students' work during small-group instruction.* The common theme in terms of progress monitoring during small-group instruction is that teachers reteach a skill by presenting a different version of what students have not mastered and then check for understanding to determine whether students have mastered the skill after the reteaching effort. The processes used to check for understanding varied, and only two teachers indicated in their interviews that they collected data while progress monitoring students' performance during small-group instruction. The excerpts from the interviews below represent specific examples of when teachers had implemented in-the-moment checks for understanding while progress monitoring students' work in small-groups:

So just like chunking it out. And whatever one rubric of mine essentially at a time… And I guess the data is literally what they're producing in that moment.

I would say responsiveness and continued tries, like more tries. I think that's really what I'm looking for—more attempts, rather. And I would say like authentic attempts, too.

I would just be, like, monitoring to ensure that the students are generally taking notes on the skill and then effectively practicing independently.

For me, that's in the moment. I put a lot of CFU questions to the scholars in small groups. It's obviously usually a skill they haven't mastered, so I'll show them, model how to do one problem, and then I will have them try a problem with some guiding questions.

I'm more visual, so having a roster and being able to track…I'll use highlighters to see students who improved or students who did not and then figur[e] out ways to recreate that for students who still maybe aren't mastering a skill.

So, as I'm walking around, listening to different conversations, I can discern who actually knows what's going on and who doesn't. Also by what they're recording, what they write down—if they record the information that is requested of them for the small group, then that's data that I can use as well.

Theme 5. *Implementation of Khan Academy in the classroom was rare during the pandemic.* Of the teachers interviewed during February 2021, seven indicated that they had not used Khan Academy during the 2020–2021 school year, although all of the teachers indicated that they had used it in previous years since Khan Academy was required to be implemented during IIT by all teachers at PRIME High School. Since the teacher interviews took place during the spring semester of the 2020-2021 remote learning school year, teachers were no longer required to implement Khan Academy during IIT. Due to time constraints and finding other online programs that provided more aligned exercises and tools to the skills and standards that teachers were teaching in math and ELA, more teachers opted not to use Khan Academy during the 2020-2021 school year than previous years. This year, four math teachers were using IXL, an online, personalized learning platform, in lieu of Khan Academy. Three ELA teachers preferred a program named Quill to Khan Academy. Several teachers who were currently using Khan Academy

indicated that they used it only for PSAT/SAT prep (i.e., from February to April) or would assign a Khan Academy module to the highest achieving students in their courses. Some teachers decided not to implement Khan Academy practice for PSAT/SAT prep this year due to the uncertainty as to whether the PSAT/SAT would be administered during the pandemic.

The coding revealed that only one teacher used Khan Academy consistently twice a week for 10–15 minutes, two other teachers used Khan Academy once a week for 15–20 minutes, and one teacher used Khan Academy 3 times a week for 20–30 minutes per session. These findings mean that four of the teachers interviewed were consistently implementing Khan Academy in weekly instruction. Regarding other participants' responses concerning implementation, one teacher indicated that they were using Khan Academy once every other week for 15–20 minutes per session, and two other teachers used Khan Academy only from February to April (for PSAT/SAT prep). One of them was implementing it twice a week for 20–30 minutes per session, while the other was implementing it 4 times a week for a total of 45 minutes. Another teacher indicated that they were using Khan Academy for just one student:

> *Right now, I only use Khan Academy for one scholar. The scholar has limited English proficiency and so…we were able to translate all of her Khan Academy system into Spanish, which has been very, very helpful in terms of just navigating and being, I think, productive in class as we navigate what supports best look like for her at the school as a whole. So I found that that's been really successful for me.*

Theme 6. *Teachers used Khan Academy for test preparation, less so for remediation.* Eight of the 15 teachers indicated that they used Khan Academy as a form of supplemental classroom instruction/practice for test preparation. Of those eight teachers, six used Khan Academy primarily for

PSAT/SAT prep, while one used it for AP test preparation. Table 6 summarizes the frequency with which teachers used Khan Academy on a weekly basis.

Table 6

Teachers Implementing Khan Academy

Teacher Count	Frequency/week	Minutes/session
1	3	20–30
1	2 (only Feb–April)	20–30
1	4	15–20
2	1	15–20
1	1 (every other week)	15–20
1	1 (once a month)	15–20
1	2	10–15
7	0	0

The quotes below present specific examples of how teachers use Khan Academy in the classroom:

> *The only way I really ever use Khan Academy is with SAT prep and typically with the highest achieving group of folks, so in my honors classes.*
>
> *I use Khan Academy a majority for SAT prep, to be honest. So, I don't really use it until we get to that testing season.*
>
> *So I use Khan Academy SAT prep for like my top scholars. So, I identify those scholars from the MAP test and throughout…Like how they're doing daily in class. And those students know who they are. Sort of like my gifted and talented scholars use Khan Academy for SAT prep.*
>
> *I use Khan Academy for SAT skills individual support or for AP testing support.*

After analyzing the coding, it became evident that the interviewed teachers did not extensively utilize Khan Academy for remedial intervention/support. The analysis of the coding suggests that students

reported to three different teachers that they did not find the Khan Academy videos engaging. Consequently, teachers felt more comfortable reteaching a skill in a small group. In other cases, teachers indicated that they were using a different online platform in lieu of Khan Academy to support the individual academic needs of learners. Furthermore, teachers' responses varied regarding the data they used to determine whether a student needs remedial support in Khan Academy.

> *You don't need as much remediation because I don't think in Khan in ELA gives that much remediation. Basically, what I use to determine it is I will look at the overall SAT data that I have, how are scholars performing. I do more one-on-one support for remediation.*
>
> *That is data from work production that kids come up with. So, it's either exit-ticket data or PA assessments or things like that to direct them towards specific skills and things like that. Diagnostics I assign from Khan.*
>
> *This is mostly based off of their grades in my class. So, the grade of my class, specifically, whether or not they are able to meet a particular standard.*
>
> *I mean, the first thing is attendance data. So, if students missed my instruction, knowing that they missed it, I would give them something similar. And I like some similar instruction from Khan Academy.*

Teachers had mixed responses regarding the data they used to monitor students' performance and progress when setting them assignments in Khan Academy. Major themes included using data from assigned SAT/PSAT quizzes, monitoring student completion/time on task on an assignment through GoGuardian, or analyzing student data on the assigned skill through reviewing the summary reports generated by Khan Academy.

> *I keep mentioning GoGuardian, but the great thing about Khan Academy is it logs their activity in time.*
>
> *As I said, before, mainly I use Khan Academy for… get them ready for SAT. That was I think the best help from Khan Academy.*

The reports from Khan, and then I would assign a small group based on their scores/if certain scholars needed remediation.

I use GoGuardian, so I'm able to see her screen in real time, which is very helpful.

All of the interviewed teachers had implemented small-group instruction in the classroom during IIT or independent practice. The teachers primarily used informal student data to determine their small groups and focused on remediating students on a specific skill during small-group instruction. On the other side of the spectrum, teachers rarely used Khan Academy during the pandemic and primarily used it for standardized test preparation such as Advanced Placement exams.

Evaluation Question 3

What are the factors that facilitate and conditions that inhibit the implementation of Tier 1 interventions (small-group instruction and Khan Academy) of MTSS at PRIME High School?

The interview questions provided data about teachers' perceptions of the facilitating factors and the challenges they face in implementing small-group instruction and the use of Khan Academy. Facilitating factors for small-group instruction included teachers perceiving physical proximity to a student helps facilitate it, as well using supplemental online platforms enhance implementation of small groups. The teachers expressed concerns regarding the time it takes to plan and execute small-group instruction and believed that there was a lack of student buy-in. With regard to Khan Academy, teachers believed that it is important for an instructor to understand the platform's features and implement it consistently; in addition, they identified progress monitoring student work as a facilitating factor to implementation. As for challenges, teachers perceived the instructional videos and questions as not always being aligned with how teachers taught and assessed content knowledge. They also believed that other online platforms better align with the content they were teaching. Table 7 provides an overview of the themes that emerged from the factors that facilitate and the conditions that inhibit the implementation of small-group instruction. Note that any theme less than 50% is not as strong as the others but worthy of note.

Table 7

Themes of Teacher Participants for Small-Group Instruction

Emergent Themes	Teacher Frequency	No. of Participants	%
Teachers believe that physical proximity to a student helps facilitate small-group instruction.	7	15	47%
Using supplemental online platforms enhances implementation of small-group instruction.	11	15	73%
Teachers have concerns regarding the time it takes to plan and execute small-group instruction activities.	9	15	60%
Teachers find it difficult to progress monitor student learning during small-group instruction.	7	15	47%
Teachers believe there is a lack of student buy-in and engagement.	5	15	33%

Facilitating Factors for Implementing Small-group Instruction

Theme 1. *The integration of supplemental online resources supports the implementation of small-group instruction.* Of the teachers interviewed, 11 identified some type of online platform as a facilitating factor for the implementation of small-group instruction. Quill, IXL, Khan Academy, and GoGuardian were most commonly mentioned. In addition, the teachers identified breakout rooms in Zoom as a helpful online tool for facilitating small-group instruction in the remote setting.

> *I've used Khan Academy in the past because [it] allows for some more individualized, self-paced learning and trying to apply some of those principles of Khan Academy to whatever it is. Obviously, IXL or Khan Academy, depending on if we have a license for IXL.*
>
> *In terms of test prep or that kind of thing, it might look like…Especially remotely, I use IXL.*
>
> *From a tech level, GoGuardian is a great way to do that. I could not imagine a world without GoGuardian.*

You can use monitors. You can use a second screen. You can use GoGuardian. I feel like there are ways that you can implement this each and every day.

So, definitely, like IXL, Khan Academy—those are all platforms that you can use to support certain skills to fill in gaps.

Theme 2. *Physical proximity to students during small-group instruction frequently occurred.* This theme is not as strong as the others but worthy of note. In the interviews, seven out of 15 teachers noted that student engagement and desirable behavior occur more often when a teacher is able to physically monitor and support students when they are working on a specific skill. The following excerpts from the interviews indicate how teachers physically monitor and support students during small-group instruction:

It's also like there is so much value in being able to hang over a kid and be like, "Write this. Write this. Write this," or walk them through it.

But, in person, having a moon-shaped table, for me, is a big one because that allows me to sit in a central spot with all the students around that spot and put it in a strategic place to be able to see the rest of the class.

When, say, for example, they are doing their own group work, then I can come around to the individual groups and then provide small-group instruction.

So, I think the office hours help in this case—you know, tutoring when we go in person. That's something that I can really use to help those students during a lesson that is very difficult.

Again, in a normal classroom setting, if I have a small group working on their thesis for DBQ, it's simple to just jump over to that group and help them.

Inhibiting Factors for Implementing Small-Group Instruction

Theme 1. *Lack of time.* Nine of the 15 teachers indicated that the lack of time was a crucial challenge in implementing in-person small-group instruction and noted that this was even more of an issue in the remote setting. The coding indicated that it is time-consuming for teachers to plan small-

group instruction and incorporate it into their lessons. Furthermore, the teachers expressed concern over the amounts of time lost in covering the required standards of the curriculum when executing small-group instruction in lessons. Time management was another factor: teachers indicated that it was a challenging to ensure that enough time was allocated to support students' learning during small-group instruction and to meet the needs of each student during small-group activity. The excerpts below discuss time being a major factor in implementing small-group instruction.

> *Remote, it just takes so much more time. Like, being able to break into a breakout room with folks is a lot more challenging.*
>
> *When you're planning on that specific task, then finding the time to get back and circle back to them to reteach that same standard again is really difficult.*
>
> *I think the hardest part right now is just time, because it takes time to give something to get data and then read the data and respond to the data.*
>
> *It takes a lot of time to do it really well, and so what I'm describing to you is like when everything goes perfectly—you know, I have enough time on a weekend and planning time to actually grade these in the way that I would want to.*
>
> *It's time to do those small groups with kids, with scholars, and time to plan it so it's effective, essentially.*
>
> *Challenging in implementing small-group instruction, for me, is just the time. Some students need more time, more than I have. So, managing the time that I dedicate to a specific student, that is the hardest part, I would say.*
>
> *Sometimes, it feels like taking time out for small-group instruction is taking away from the larger curriculum, and that you're just losing more instruction by doing that.*

Theme 2. *Monitoring student learning during small-group instruction.* This theme is not as strong as the others but worthy of note. The coding and analysis of words and phrases resulted in the following theme emerging: progress monitoring student learning during small-group instruction is an

additional obstacle to the effective implementation of small-group instruction. The pandemic certainly impacted teachers' responses to this, as seven of the 15 teachers interviewed discussed challenges associated with monitoring student learning during small-group instruction, especially when attempting to implement breakout rooms on Zoom. On Zoom, teachers can work with only one breakout group at a time, which makes it difficult to progress monitor other student groups. Teachers also discussed the challenges posed by monitoring whether other students were on task while simultaneously working with a small group. The quotes below discuss the challenges teachers faced regarding progress monitoring during small-group instruction.

> *In the virtual setting, the biggest thing that is tough is to run a small group; you have to pull the small group. In order to pull the small group, we got to put them in a breakout room. When they go into that breakout room, you're not monitoring… Well, I shouldn't say "You're not," but it is really tough to monitor the rest of the students.*
>
> *I think it's just really hard to obviously make sure you're catering to every scholar's needs, because even in small groups, there are still differentiations. Sure, everyone is in this group to work on fractions, but maybe one scholar needs even more support with fractions than another.*
>
> *When I'm in a small group, it's near impossible for me to be here and also be monitoring students.*
>
> *If I'm working with that first group, it's hard for me to know if my other two groups are actually working on the practice and using that time intentionally.*
>
> *I would say it is challenging to build a classroom culture in person when you have 30-odd people in your classroom and then you're getting them to work effectively in small groups and then you are attempting to monitor, make sure that folk are meeting behavioral expectations and being safe and on task and that their conversations are effective and productive and academic while also trying to deliver some of that small-group instruction.*

Theme 3. *Lack of student engagement and buy-in with small group instruction.* This theme is not as strong as the others but worthy of note as it emerged amongst one-third of the teachers**.** A third theme derived from the coding was the lack of student buy-in and engagement in small-group instruction. Five of the 15 teachers interviewed discussed the challenge posed by getting students to engage with an assigned task in a small-group setting, particularly when conducting small-group instruction in the remote setting via Zoom. In the interviews, teachers mentioned how challenging it is to motivate a student to complete work over Zoom or to get students to attend a small-group instruction breakout room. Since work completion is relatively low in the remote setting, it is difficult for teachers to determine the root cause of a student's struggle with the assigned skill.

> *The scholars who are failing currently are the ones who need to show up for office hours, and they're not coming. Oftentimes, even though I structure class where they can stay or even at the beginning where they need support, they're either just like not online or they're refusing to do the work.*
>
> *I would say the bigger issue is also students who just haven't completed anything. And so it's hard to know whether it's… that they're having trouble managing their time or understanding the concept and then that often is more of an individual issue to address.*
>
> *So that's been challenging because kids have a certain maturity level. Some are more mature than others, and so some participate well and others do not. So, that's a challenge because within a small group, you have to communicate with other people in your group, and some kids have difficulty just reaching across the aisle and doing that.*
>
> *So, sometimes, I do these small-group polls, and I get maybe one kid who is following along. I'm not directly there to like hover over and point out everything that they need to do, so it's a lot of independence on there.*
>
> *Although sometimes, though, those students, they have problems. They're kind of shy, so they don't want to expose themselves. So it's very difficult.*

So, the buy-in. There are obviously scholars who need that small-group instruction. And whether you're in-person or on Zoom, where it is easier for them to Zoom out, is they don't stay for the support. So, I would say, honestly, the engagement level and the investment of scholars staying and coming to that added support.

For the students who tend to need those interventions, they're often off-camera and reluctant to speak on the microphone.

Facilitating Factors for the Implementation of Khan Academy

Table 8 describes the emerging themes from Khan Academy.

Table 8

Themes Emerging and Frequency of Participation in Khan Academy

Emerging Theme	Teacher Frequency	No. of Participants	%
Teachers believe it is important for an instructor to understand the platform's features and implement it consistently.	10	15	67%
Teachers perceive progress monitoring student work to be effective.	7	15	47%
Instructional videos facilitate student learning.	4	15	27%
Instructional videos and questions are not always aligned with how teachers are teaching and assessing content knowledge.	5	15	33%
Teachers believe other online platforms better align with teacher's content.	7	15	47%

Theme 1. *Teacher familiarization with the Khan Academy features.* The analysis of the coding of words and phrases revealed three major themes. The most common theme for facilitating the successful implementation of Khan Academy is the teacher familiarizing themselves with the tool's features, planning what skill they want students to practice, and using Khan Academy in the classroom with fidelity. The teachers indicated that explicit classroom systems need to put in place when implementing Khan Academy practice; in addition, students should consistently be assigned individual skills to work on in the online tool. Of the 15 teachers, 10 expressed the importance of teachers being aware of the features of Khan Academy and implementing it consistently in the classroom to have a positive impact on student learning. Below are some quotes from teachers' interviews supporting this theme:

> *I think because of the way the platform works, I think being really clear and explicit about what specific things scholars need to do and how they need to show that they have completed the work and done the work, if that makes sense.*
>
> *I think implementing it is like making it a part of your repertoire and making it organic, because I don't want it to always feel like something else to do. If it is a resource or tool that I want them to use, then I want it to be the resource or tool.*
>
> *I think consistency with Khan Academy. In years past, when I used Khan Academy more frequently, it was just more successful.*
>
> *But having strong systems and routine, so that scholars are not only able to log in but able to log in and get to exactly where they need to be without raising their hand once or without a single teacher instruction.*
>
> *Consistency with its implementation on a day-to-day basis. I definitely think Khan is something that needs to exist two to three times a week at minimum for it to really have that impact and for you to get rich data.*
>
> *I think definitely having a strong system in place. Like scholars know how to find the skill they should be working on. They know if they get all three problems wrong that they shouldn't just*

stop and give up. So I do think it just has a lot to do with how you set up the system and kind of reinforce those expectations.

Theme 2. *Progress monitoring students' individualized learning.* A second theme that arose from the coding as a facilitating factor for the implementation of Khan Academy is progress monitoring students' individualized learning. This theme is not as strong as the others but worthy of note, since seven of the 15 teachers acknowledged that to ensure individualized learning for all students, a teacher would need to monitor every student's progress on the Khan Academy progress report (to track course progress) and/or the skills report (to track skill-specific progress):

Monitoring is probably the biggest thing. The facilitator has to be present in the moment, monitoring the screens [and] helping the scholars by giving the assistance that they're needing as they need it.

Setting aside time in class and then having… If it was in person, we could monitor directly, there, so we could see and support to get kids on the right page.

I think monitoring, whether that's Khan Academy… For AP, I think, they do a good job of randomizing questions because in some cases, if it was like a three-question multiple-choice quiz, I mean especially in the remote world, there's no saying that a scholar couldn't just be like, "Hey, here's a text message that says 1 is A, 2 is B, 3 is C."

So they do a good job of like switching up the questions, using different types of stimuli. Sometimes it's a picture associated with a question. So I think in that case, the monitoring part is important.

Four of the 15 teachers discussed having students watch the Khan Academy instructional videos for the assigned skill as an integral component that empowers individual learners to study at their own pace. The instructional videos help students understand a concept, and the illustrations in a digital format provide a different way for students to learn. In addition, students can pause, go back, re-watch, or skip

ahead during these instructional videos. This makes the student learning experience more personalized and allows an individual to set their own pace.

> *Quite a while ago, I used to teach math, and I used to really love Khan Academy because it has videos and things like that.*
>
> *Another thing that's great about that is I think about visual and audio aid.*
>
> *They found it more engaging than IXL because of the nature of the videos.*
>
> *Another one is Khan Academy. I love that they have instructional videos. And one of the things I was able to do with Nearpod is, as you're watching the Khan Academy video, you can insert a question. So I'm able to do a check for understanding. You can implement that at the student's pace.*

Inhibiting Factors for the Implementation of Khan Academy

Theme 1. *Khan Academy materials that do not align with specific skills.* This theme is not as strong as the others but worthy of note. The responses revealed that Khan Academy's instructional videos and questions do not always align with the specific skills that teachers want to teach; alternatively, the instructional videos may not align with the way in which teachers are teaching specific skills. In addition, the coding revealed that teachers have concerns regarding the limited number of practice questions that students receive on a certain skill. This makes it difficult to assess whether a student has mastered a concept. Five of the 15 teachers indicated that inconsistencies between the instructional videos and the precise skills they wanted students to learn could cause confusion for students. Two teachers also indicated that students found the videos on Khan Academy "monotonous" and "boring" and indicated that they therefore preferred to directly reteach skills.

> *I think that's been my biggest difficulty with implementing Khan Academy—either that some of the lessons seem tangential to what we're doing in the classroom or that I can design something that is more efficient.*

I think it was that like sometimes, Khan Academy didn't always have the exact skill I wanted them to practice. So maybe we were working on rational functions. Obviously, there would be stuff on rational functions, but there might not be exactly the one skill that I knew they needed to work on, like maybe focusing on finding the holes of a rational function was not necessarily a stand-alone skill on Khan Academy.

It's not so much understanding Khan Academy but just understanding the content that is there, because one of the vague things about world history is that you need to just know overarching themes and continuity.

And, last year, I did find some scholars on Khan Academy doing the three problems, getting them wrong, and then just stopping for the time and not doing any more practice. So obviously, that's a problem, because they didn't master the skill. And then they weren't given any more at-bats on Khan Academy, so I'd have to come up with something else for them to do.

Reading is the thing that students seem to have more problems with, and it has a bigger impact, especially on SAT scores, and Khan doesn't give an option for that.

I think the challenging part is like there are nuances between the way that Sal explains it on Khan Academy versus how I do it.

So depending on the unit, some units are like super-aligned, and other units, it's like if they hear the way the method I'm instructing and then they go to Khan Academy, sometimes it can confuse students if it's not aligned.

Just the fact that ELA is so subjective, like there's not really a set of steps you can follow for a lot of our standards and a lot of our practices that it's like if he's not explaining it the way that I think it should be explained then

The video is not helpful anymore because it's just confusing them.

I can teach a grammar skill pretty easily and quickly. Reading is the thing that students seem to have more problems with, and it has a bigger impact, especially on SAT scores, and Khan doesn't give an option for that.

Theme 2. *Teacher preference for different online platforms.* Another theme that emerged from the coding was that teachers had been introduced to several different online platforms for instructional support, and they had found different platforms that are more tailored to their instructional needs. Since 7 of the 15 teachers used a different online program for supplemental instructional support this school year, this theme is worthy of note but not as strong as others. The most notable platforms are Quill (for ELA teachers) and IXL (for math teachers). ELA teachers indicated that Quill provides writing and grammar practice that is better aligned with the skills being taught in their respective courses. Math teachers indicated that IXL provides more practice problems on a specific skill than Khan Academy does, which makes it easier for teachers to assess a student's mastery of a skill. Teachers also highlighted that these instructional platforms are easier to implement, saving them instruction time.

Obviously, Khan Academy is free. IXL is not. But I do think it's really worth it with IXL because, like I said, it gives them as many problems as they need to work on, whereas with Khan Academy, there's, like, three problems.

"In the past, I used IXL. That was more helpful than Khan Academy."

I guess, maybe at the beginning of the year, I could have been a little bit more intentional, but I did feel that in some cases, especially for AP, Khan Academy was doing some of the same things that AP Classroom is doing, and I guess I just didn't want to have too many platforms going on in the remote world.

I know we were using NoRedInk and Quill for grammar that same year, and those seemed much more efficient, and so I think we started using those more towards the end of the year.

It kind of goes back to what I talked about at the beginning of the interview, which is that I do personally prefer IXL. And, last year, we did not have an IXL license right away in the school year, but this year we do.

Although, right now, for me teaching college classes, Khan Academy is not something that I'm using right now. It's just not a big help for right now. I have different resources for that.

Summary of Findings

The findings from the *Perceptions of Practices Survey* indicate that teachers and staff at PRIME High School perceived themselves as needing little support in using data to make instructional decisions and to determine which students are or are not meeting the desired academic standards. Teachers and staff perceived themselves as having minimal skills in collecting different types of data and needing more substantial support in this area. In addition, it was the overall perception that they needed more support to effectively identify the appropriate academic interventions that are physically available to them as teachers. Furthermore, the teachers felt that they required more support with ensuring that a student intervention plan is supported by instructional data.

Several themes emerged from the findings related to evaluation question 2. Teachers realized the value of implementing small-group instruction, as evidenced by the fact that all 15 teachers were implementing it on a weekly basis. The teachers used small-group instruction primarily as an opportunity to assist students who need additional support with a specific standard/skill. Progress monitoring and formal data collection on student growth by teachers during small-group instruction activities occurred inconsistently, as informal teacher data collection was more prevalent in classrooms. Teachers were also less likely to implement Khan Academy in their classrooms during the pandemic, as evidenced by the fact that only eight of the 15 teachers were currently using the platform. In addition, they used Khan Academy primarily for test preparation for the PSAT/SAT and AP exams. Teachers provided varied responses to the question of the data that they use to determine if a student needs remedial support in Khan Academy.

Their decision-making regarding remedial support therefore lacks uniformity and consistency because it is not guided by reliable data.

Themes were also generated from the responses to evaluation question 3, which addressed the factors that facilitated the implementation of small-group instruction and Khan Academy and the conditions that inhibited such implementation. The importance of integrating supplemental online resources and of a teacher's physical proximity to a student in the successful implementation of small-group instruction emerged as a facilitating theme. A further facilitating theme is the need for teachers to have a clear understanding of the features of Khan Academy, the importance of implementing the program consistently and progress monitoring students' learning, and the value of having students watch the instructional videos on the platform.

Conditions that inhibited the implementation of small-group instruction include the time it takes for teachers to plan, the time lost due to the pacing of the curriculum, being able to progress monitor student learning during small-group instruction, and a lack of student buy-in. With respect to Khan Academy specifically, this platform's instructional videos and questions do not always align with the ways in which teachers teach and assess content knowledge. Consequently, the interviewed teachers used different online platforms that are better tailored to students' instructional needs.

CHAPTER 5

RECOMMENDATIONS

This section focuses on the evaluation findings from 34 participants in the *Perceptions of Practices Survey* and the 15 teacher interviews on the instructional interventions of small-group instruction and the use of Khan Academy. This section presents a summary of the major findings, implications for policy and practice, and recommendations for future research.

Discussion of Findings

Evaluation Question 1

To what degree do teachers perceive they have the skills required to implement Tier 1 interventions?

For the purposes of this study, the focus for recommendation one for implications and practice is to provide professional development to teachers on collecting different types of data and accessing appropriate district- or school-wide assessments. Perceptions regarding data collection and accessing assessments was the only question on the survey that earned a staff average score at a 2, which reflects that staff perceive as having minimal skills in this area and need more substantial support in data collection and accessing data. Through teacher interviews, it was noted that teachers struggle with knowing how to use the data to inform the appropriate instructional interventions to support an individual student. As stated in Chapter 2, professional development often focuses on the main components of MTSS, which include, but are not limited to, data-based decision-making, research-based interventions, the three-tiered delivery model, and progress monitoring (Zumeta, 2015). Findings from this study differed, as teachers indicated

on the survey and in the interviews that they need more support and specific training on how to collect different types of data, and how to use it to inform instructional decisions. Easterling and Metz (2016) made a similar finding: teachers frequently feel unprepared to completely engage in data. Easterling and Metz performed a literature review on teacher perceptions regarding data-driven decision making. Despite attempts to strengthen teachers' capacity for data-use, teachers often feel unable to fully engage in data. Even teachers who are better prepared and use data more frequently do not feel prepared to make instructional decisions based on the data. A key issue is the lack of attention devoted to teachers' viewpoints on data utilization, as well as insufficient training on how to effectively modify instructional techniques once the evidence is presented (Easterling & Metz, 2016). Furthermore, these authors recommended that educational leaders should be focusing on teachers' perspectives, in order to foster a data-driven culture in the school. This prompted more research on effective school leaders and the role of data-driven decision-making in their efforts to increase academic attainment. The authors stated that effective data utilization requires administrators to focus on three components: leadership responsibilities, professional development responsibilities, and school culture responsibilities.

Similarly, Reeves and Chiang (2018) found that teachers and support personnel are frequently preoccupied with gathering vast amounts of data but lack proper training or opportunities to evaluate, understand, and apply the data in instructional settings. As a result, the degree of data literacy must be measured, and appropriate support for teachers and others who require it must be provided.

In Colorado, among the major essential components of an MTSS framework are data-based problem-solving and decision-making. Data push the system to locate the cause of the problem and the way to find a suitable solution using evidence-based interventions (Ervin et al.,

2007). The MTSS framework requires schools to analyze assessment data and demonstrate high levels of proficiency in collecting data and progress monitoring (Zumeta, 2015). Teachers have reported that it is extremely challenging to demonstrate high proficiency in collecting and analyzing data; this could be due to the lack of adequate training that teachers have received regarding data-based decision-making skills and collecting and analyzing data (Zumeta, 2015). In addition, teachers need more practice opportunities to hone their skills in collecting and analyzing data.

In summary, the findings from the *Perceptions of Practices Survey* indicated that teachers and staff at PRIME High School perceived themselves as needing little support in using data to make instructional decisions and to determine which students are or are not meeting the desired outcomes for academics. In contrast, teachers and staff perceived themselves as having minimal skills in collecting different types of data and accessing data from appropriate district- or school-wide assessments and needing more substantial support in this area. MTSSs have mostly been used in elementary schools and thus translating this system for secondary schools is important. Adequate professional development and training on can support this gap.

Evaluation Question 2

To what extent do teachers report that they are using small-group instruction and Khan Academy in the classroom?

Several themes emerged from the coding of the teacher interviews. The teachers found small-group instruction to be integral to implement during independent practice or IIT, as all of the teachers interviewed were implementing it on a weekly basis. In addition, the teachers also primarily used small-group instruction as an opportunity to support students who need additional support with a specific standard/skill. The analysis and coding of my notes revealed that 12 of 15

teachers analyzed informal exit ticket data to determine their small groups for the next day's class. Teachers also primarily performed in-the-moment informal checks for understanding when progress monitoring students' work during small-group instruction. The process for checking for understanding varied based on teachers' responses, and only two teachers indicated in their interviews that they collected data while progress monitoring students' performance during small-group instruction. Therefore, progress monitoring and formal collection of data on student growth by teachers during small-group instruction activities are inconsistent and occur rarely, as informal teacher data collection is the most prevalent data decision-making tool in classrooms.

Teachers were less likely to implement Khan Academy in their classrooms during the pandemic. Eight of the 15 teachers interviewed were currently using the platform, primarily for test preparation for the PSAT/SAT and AP exams. Several teachers who were not currently using the platform indicated that they had been using Khan Academy more in the classroom prior to the pandemic but found other online platforms that were better suited to meet their students' needs, such as Quill or IXL. Some of the teachers' responses indicated that students reported the videos provided on Khan Academy were not engaging. Teachers' responses also varied concerning the data that they used to determine whether a student needed remedial support in Khan Academy, thus lacking uniformity and consistency regarding reliable formal data and progress monitoring to guide decision-making. These findings on implementation and effectiveness of Khan Academy were different from Light and Pierson's 2014 study, "Increasing Student Engagement in Math: The Use of Khan Academy in Chilean Classrooms." The authors identified various advantages of incorporating Khan Academy in teaching mathematics. Light and Pierson concluded that the benefits of incorporating Khan Academy in the classroom include students becoming more engaged in math, self-regulated math learning becoming a motivator,

students being encouraged to tutor each other, students working on tasks appropriate for their math level, students mastering more math skills, and students perceiving themselves as math learners (Light & Pierson, 2014).

Another research study that had different findings was conducted by Zengin (2017), who determined the impact of implementing Khan Academy in a flipped classroom approach on student academic achievement. The findings indicated that the flipped classroom method and exposure to Khan Academy increased student academic achievement. The Khan Academy materials coupled with mathematics software was determined to be an effective approach for the flipped classroom model, as the findings demonstrated that students were better able to understand and visualize math concepts and retained the skills learned through the videos. Furthermore, the study revealed that students were more prepared for lessons, and students found math to be more enjoyable to learn (Zengin, 2017). PRIME High School's teachers' responses on Khan Academy had very different responses, as 47% of the teachers interviewed indicated that they aren't currently using Khan Academy in their instruction, as they preferred using a different online platform to support students. Five teachers' responses at PRIME High School revealed that Khan Academy's instructional videos and questions do not always align with the specific skills that teachers want to teach; alternatively, the instructional videos may not align with the way in which teachers are teaching specific skills. In addition, teachers at PRIME High School have concerns regarding the limited number of practice questions that students receive on a certain skill. This makes it difficult to assess whether a student has mastered a concept. Five of the 15 teachers indicated that inconsistencies between the instructional videos and the precise skills they wanted students to learn could cause confusion for students. Two teachers also

indicated that students found the videos on Khan Academy "monotonous" and "boring" and indicated that they therefore preferred to directly reteach skills.

In essence, progress monitoring is the area of improvement for PRIME High School. Therefore, Recommendation 2 for implications and practice focus on progress monitoring and program fidelity by providing frequent and meaningful feedback through instructional coaching (Gutkin & Curtis, 2009). The importance of coaching as part of the MTSS model cannot be overstated; a multi-level approach for coaching instructors is one way to ensure that teachers receive coaching while conducting consistent progress monitoring on instructional interventions. Progress monitoring is an evidence-based assessment practice and imperative component of effective instruction (Gutkin & Curtis, 2009). The data from progress monitoring are used at the Tier 2 level to identify students who are making progress in the current instruction and intervention level and students who are not. This must be done with fidelity throughout the school year, as it is essential in providing focused supports throughout the year in MTSS implementation (Donovan & Cross, 2002). Data for progress monitoring is gathered on a regular basis (e.g., every 6 weeks) in universal-level supports and more often in secondary and tertiary-level supports. The data is used to assess the efficacy of education and to drive a change in instruction if it is not displaying success at the higher levels (Lane et al., 2010). A school-based team should ideally collaborate to assess progress and provide recommendations for instruction and other necessary supports (Sailor, 2014).

Evaluation Question 3

What are the factors that facilitate and conditions that inhibit the implementation of Tier 1 interventions (small-group instruction and Khan Academy) of MTSS at PRIME High School?

The findings regarding the facilitating factors for implementing small-group instruction are that teachers perceive physical proximity to a student and using supplemental online platforms as helping to enhance the implementation of small-group instruction. These findings differed from previous studies on facilitating factors for successful implementation of small-group instruction. Leming et al. (2003) and Berevino and Snodgrass (1998) found that teachers need to identify the content to be taught and the specific criteria for determining mastery. Secondly, the ideal group size is determined to ensure that individual accountability is part of the process for all team members. Groups should range in size from three to size participants, and students should be assigned to groups according to varied achievement levels, including one high- and one low-performing student (Hertz-Lazarowitz et al., 1992). Next, the classroom should be arranged, and expectations and tasks for small-group instruction should be reviewed with students. This includes the teacher reviewing individual and group accountability expectations and the identification of a timeline to ensure that students stay on task and work towards a goal. The teacher generates the initial material and then provides support and clarification to the groups as needed. The teacher is a guide who "explains, directs, models, redirects, facilitates, and evaluates" (Berevino & Snodgrass, 1998, p. 65). The teacher observes and questions students while walking from group to group and checks for understanding. At the conclusion of the task, it is recommended that a debrief be conducted, where each student demonstrates their mastery of the skill or concept learned (Berevino & Snodgrass, 1998). Previous studies on small-group instruction also highlighted specific instructional techniques that teachers employ during small-group instruction. Some examples of small-group instructional techniques include Socratic seminars, discovery learning, problem-based learning, roundtable discussion, and think/pair sharing (Pedersen & Digby, 1995). None of these previous studies

discussed the use of online platforms during small-group instruction, which was a major theme from teacher interviews as a facilitating factor for implementing small-group instruction.

Teachers at PRIME High School perceive the importance of teachers understanding the features of Khan Academy, implementing it in the classroom consistently, progress monitoring students' learning, and having students watch the instructional videos as facilitating factors to implementing Khan Academy. Light and Pierson (2014) made similar findings. Through their study, they emphasized the teacher guides on the Khan Academy website as a facilitating factor to classroom implementation. In addition, when planning lessons, a teacher should consult sections of Khan Academy that directly align with the skills that they plan to teach in a given week. Next, the teacher should determine how to best incorporate the Khan Academy section to students. The section(s) can be assigned as independent practice after whole-group instruction, or teachers could even assign individual sections to each student during independent practice for differentiation or remediation based on the skills that each individual needs more support in (Light & Pierson, 2014). These findings were similar to PRIME High School teachers' responses to one of the major facilitating factors to implementing Khan Academy. Findings emphasized the importance of a teacher familiarizing themselves with the tool's features, planning what skill they want students to practice, and using Khan Academy in the classroom with fidelity. Through the interviews, the teachers indicated that explicit classroom systems need to put in place when implementing Khan Academy practice; in addition, students should consistently be assigned individual skills to work on in the online tool. Of the 15 teachers, 10 expressed the importance of teachers being aware of the features of Khan Academy and implementing it consistently in the classroom to have a positive impact on student learning

Inhibiting conditions to implementing small-group instruction include the time it takes for teachers to plan small-group instructional activities, the time lost in direct instruction/pacing of the curriculum, progress monitoring student learning, and the lack of student buy-in. As for Khan Academy, the teachers expressed concerns regarding the instructional videos and questions not always being aligned with how they are teaching and assessing content knowledge in the classroom. Therefore, the teachers used different online platforms that they perceived as being better tailored to students' instructional needs.

To improve the effectiveness of teacher planning and consistency with supplemental resources, providing teacher time for collaboration is crucial. Wilcox et al. (2013) investigated teacher attitudes toward the MTSS framework with K-8 and 9th-12th grade teachers in schools in Texas and Michigan. Two themes emerged from this mixed-methods study in respect to MTSS implementation: professional growth requirements and professional collaboration. Therefore, the focus for recommendation three for implications and practice is protecting teacher collaboration time through the development of professional learning communities (PLCs).

Implications for Policy and Practice

This section provides recommendations based on the findings. At the heart of these recommendations are the themes of professional development, program fidelity, and teacher collaboration. These themes have been incorporated into the study's recommendations. Table 9 summarizes the research findings, themes, and supporting literature.

Table 9

Study Recommendations Based on Findings

Finding	Related Recommendation	Supporting Literature
Teachers and staff perceived themselves as having minimal skills in collecting and accessing different types of data for instructional interventions.	Provide differentiated MTSS professional development training on problem identification, problem analysis, progress monitoring, and program evaluation.	Ball & Christ, 2012; Lange et al., 2012; Reeves & Chiang, 2018; G. G. Robinson et al., 2013
Progress monitoring and the collection of data on student growth by teachers occur inconsistently.	Ensure program fidelity through ongoing coaching and feedback on data-based decision making and progress monitoring student growth.	Hagermoser Sanetti, & Collier-Meek, 2015; Meyer & Behar-Horenstein, 2015; Nelson et al., 2015; Wood et al., 2016;
Teachers are concerned by the lack of student buy-in and the time spent planning and implementing SGI. Teachers implemented various supplemental online platforms across the board, with little collaboration.	Protect teacher time for collaboration and develop PLCs to focus on student results through specific questions that guide student learning.	DuFour, 2004; DuFour et al., 2010; Stoll et al., 2006

Note. SGI = small-group instruction. MTSS= multi-tiered system of supports. PLCs= professional learning community

Recommendation 1

Provide Multi-tiered System of Supports (MTSS) professional development training on problem identification, problem analysis, progress monitoring, and program evaluation. A key part of the MTSS framework is ensuring the quality and consistency of the professional development training and support provided to teachers. There is a particular need for professional development training that focuses on increasing teachers' capacity and use of data.

Teachers and support personnel are frequently preoccupied with gathering vast amounts of data but lack proper training on analyzing, understanding, and using such data in instructional settings (Reeves & Chiang, 2018). As a result, the degree of data literacy must be measured, and appropriate training must be provided for teachers and staff who require it. This necessitates the creation of a year-long professional development plan to which all stakeholders can hold one another accountable. Ample time for data discussion during staff meetings, as well as preapproved professional development days, should be included in the professional development plan. School leaders must devote special attention to informing their teachers and staff about the various types of data the school gathers, how to use the data, and how to leverage data patterns to drive instruction and improve teaching methods (Lange et al., 2012). School leaders must also create school-wide expectations concerning data-driven instructional decision-making.

In MTSS, data-based decision making is a cyclical process with four steps: problem identification, problem analysis, progress monitoring, and program assessment (Ball & Christ, 2012). The focus of the professional development trainings led by school leaders must focus on these specific areas of data-based decision making. For problem identification, professional development trainings should focus on supporting teachers being able to identify students who are academically at-risk through analyzing universal screening benchmark data in computer adaptive testing, or academic screeners (Ball & Christ, 2012). For problem analysis, school leaders should support teachers to be able to analyze data to prioritize a specific area of need that needs to be targeted for instructional intervention. Professional development training should focus on supporting teachers to break down student assessment results by domain (math fluency, reading comprehension, decoding, etc.) once the specific skill deficit has been identified and targeted, teacher's must receive training on how to progress monitor students' growth through

implementing a data collection tool that is updated bi-weekly. “The data points that are collected through the progress monitoring assessments document the student’s responsiveness to the intervention.” (Ball & Christ, 2012; G. Robinson et al., 2013). Finally, professional development trainings and teacher support needs to have an emphasis on program assessment. Training in this area would include analyzing the gathered progress monitoring data points in a summative way to evaluate educational results after the intervention has been delivered for the required length and intensity (Ball & Christ, 2012). To assess instructional results, there must be alignment between the detected skill deficit, the prescribed intervention, and the level of fidelity with which the intervention is provided (Ball & Christ, 2012; G. Robinson et al., 2013). This would help create a culture shift with teachers and staff to embrace the use of data in improving teacher instruction and student learning (Lange et al., 2012).

A comparative study on effective teacher professional development stressed the importance of consistency and sustained duration (Desimone & Pak, 2017). The study emphasized the importance of sustainability and consistency in professional development trainings for such trainings to be effective in enhancing teaching practices and student learning (Desimone & Pak, 2017). Professional development programs that continue throughout the school year and include 20 hours or more of contact time are considered to be more beneficial than one-off workshops, which typically last a full or half day. Consistency in addressing student needs, teacher beliefs, content, goals, and activities is also integral to providing high-quality professional development trainings (Desimone & Pak, 2017).

Recommendation 2

Ensure program fidelity through ongoing coaching and feedback on data-based decision making and progress monitoring student growth. Another important aspect of the MTSS

framework is progress monitoring student performance. The goal of progress monitoring is to evaluate the success of instructional interventions put in place to meet the needs of students. Progress monitoring must be done with fidelity throughout the school year, as it is essential in providing focused supports throughout the year in MTSS implementation (Donovan & Cross, 2002). Progress monitoring data are gathered on a regular basis (e.g., every 6 weeks) as part of universal-level interventions, and more often in secondary and tertiary levels. The data are used to assess the efficacy of education and to drive a change in instruction if it is not displaying success at the higher levels (Lane et al., 2010). A school-based team should ideally collaborate to assess progress and provide recommendations for instruction and other necessary supports (Sailor, 2014).

Instructional coaching is a method that has proven successful in providing meaningful and frequent feedback to teachers to ensure program fidelity (Nelson et al., 2015). Coaching is an important component of the MTSS model; one way to ensure that teachers receive coaching while implementing MTSS interventions is to use a multi-level approach for coaching. A multi-level instructional coaching model provides follow-up coaching support to professional development trainings and is an effective strategy for holding teachers accountable in terms of improving their instructional performance (Wood et al., 2016). Within this framework, teachers would receive consistent supervisory coaching, classroom observations, and targeted feedback to improve instructional practices on data-based decision making and being held accountable on progress monitoring student growth on a bi-weekly basis. Consistent weekly coaching meetings should focus on teacher growth in analyzing more complex data-based decision-making skills, such as the use of multiple assessments and resources as well as holding teachers accountable with collecting progress monitoring data on a bi-weekly basis. In a similar study completed by

Meyer and Behar-Horenstein, (2015), teachers stated a desire for additional assistance in using data from different assessments to determine which skill should be targeted for a student. Allowing a teacher to practice with various evaluations and reporting methods in weekly instructional coaching sessions may be valuable to their development (Meyer & Behar-Horenstein, 2015). Another component of the multi-level instructional coaching model is real-time coaching. In this instructional strategy, a coach delivers real-time feedback to a teacher throughout a classroom observation, which has been found to improve the fidelity with which instructional strategies are implemented (Wood et al., 2016). Instructional coaches should observe teachers implementing an instructional intervention, and how they are collecting progress monitoring data in-the-moment. Afterwards, the teacher and instructional coach should debrief on the teacher's reflection and instructional coach's feedback at their next scheduled meeting. Other hired professionals, such as reading and math interventionists, could also be integrated into the coaching model.

Hagermoser Sanetti and Collier-Meek (2015) conducted a study on MTSS implementation interventions. Even though the study was conducted on the elementary level, there are implications for the secondary level. As part of MTSS implementation, the authors discuss a multi-tiered implementation approach. This strategy highlights the need for a tiered implementation approach and assists in making decisions about which strategies to adopt within an MTSS. Tier 1 of this technique entails standard coaching and data collecting to determine whether additional implementation assistance is required. Tier 2 includes additional coaching meetings and provides for a more intensive approach to consultation. The final tier of assistance includes continual coaching to assist with implementation (Hagermoser Sanetti & Collier-Meek, 2015).

Recommendation 3

Protect teacher time for collaboration and develop PLCs to focus on student results through specific questions that guide student learning. To support teacher learning and share best teaching practices, PRIME High School must have opportunities to collaborate in PLCs. A PLC is defined as a group of educators who share a common vision and collaborate and reflect in an ongoing and reflective process to enhance student success while also improving school culture (DuFour et al., 2010). A PLC must have five important components: shared values and vision, collective accountability, reflective professional inquiry, professional collaboration, and encouragement of group and individual learning (Stoll et al., 2006).

When school buildings protect teaching time and allow teachers to collaborate in a PLC, this can have three major impacts for teacher teams, which are learning, collaboration, and outcomes (Stoll et al., 2006). Learning refers to both educator and student learning. To improve student learning, a PLC should focus on what educators want students to learn, how they will know when each student has learned a skill, and how they will respond when a student encounters challenges in learning (DuFour et al., 2010). Thus, PLCs offer a collaborative way for teachers to learn more and to help students to learn more.

At PRIME High School, teacher success should be assessed by student outcomes (DuFour et al., 2010). In a PLC mindset, data, not instruction, is a sign of success. It is recommended that PLCs at PRIME High School gather evidence of student learning, examine student work, determine current levels of performance, set goals to improve student learning, and collaborate to inform and improve professional practice in order to attain that goal. To improve student learning, a PLC should meet bi-weekly and ask four questions:

1. What do we want each student to learn?

2. How will we know when each student has learned it?
3. How will we respond if a student experiences difficulty in learning?
4. What will we do if the student already understands it?

(DuFour et al., 2010). These four questions center on the student, their learning, and the process of improving student learning for all students. It is recommended that these specific questions guide the conversation for a PLC and are asked and answered by a group of teachers rather than by a single teacher's point of view and experiences. These four questions are designed to (a) promptly identify students who require further assistance, (b) arrange for intervention rather than remediation, and (c) require students to continue receiving additional assistance until mastery is achieved (DuFour, 2004).

Without PLCs, teachers in traditional classrooms work in isolation when making decisions, attempting to uncover ways to improve student achievements, prioritizing learning requirements, and attempting to clarify what students must learn. This isolation encourages each teacher to make their own teaching decisions without the support of a collaborative team. When teachers collaborate in a space such as a PLC, the emphasis shifts away from teaching and toward learning. Collaboration is connected to enhanced student learning (Kruse & Louis, 2009). There are three characteristics that link collaboration to student learning, which are a professional community, organizational learning, and trust. A PLC that focuses on creating a collaborative learning culture can help students learn more effectively (DuFour et al., 2010). Teachers who participate in PLCs do not work alone; instead, they work in collaborative teams with a common goal of learning. As a result, in schools where PLCs are used, collaboration takes the role of isolation. Successful and high-performing schools have evidence of a collaborative culture, while low-performing schools are lacking in this regard. Such evidence demonstrates the

existence of a continuous, systematic process in which teachers examine student work, provide feedback, and engage in inquiry in order to increase student accomplishment and foster deep learning (DuFour et al., 2010).

In schools that use PLCs, teacher effectiveness is determined by student outcomes. In a PLC mindset, success is measured based on data rather than instruction. Team members in a PLC gather evidence of student learning, examine student work, determine current levels of success, set goals to improve student learning, and collaborate to inform and improve professional practice (DuFour, 2004).

Recommendations for Future Research

One of the limitations of this study was that it only included 15 teacher participants for the interviews and 34 teachers for the survey within one school. Future studies should be conducted with multiple schools and staff participants from different school buildings within PRIME Prep. This would enable for other perspectives to corroborate with or differ from the teachers' perspectives in this study concerning the MTSS model, small-group instruction, and Khan Academy. Such a future study could also be used to develop more robust frameworks for MTSS professional development, coaching and feedback cycles, and PLCs.

Additionally, any future study should include in-person interviews with teachers and other staff members. Due to the COVID-19 pandemic, the interviews for the present study were conducted online via Zoom. In-person interviews may elicit more in-depth perceptions and responses from participants, thus allowing the researcher to probe deeper.

Summary

The purpose of this program evaluation was to examine teachers' perceptions of their current skills in implementing MTSS interventions. The problem addressed in this study was the

inhibiting conditions to implementing the small-group instruction and Khan Academy interventions in the classroom.

The findings of this study contribute to the existing literature on providing quality professional development training on MTSS programming to staff, offering ongoing instructional coaching and feedback to ensure data-driven instructional strategies, and protecting collaboration time for teachers by creating PLCs. The survey and interviews revealed that teachers and staff perceived themselves as having minimal skills in collecting different types of data and needing more substantial support in this area. Progress monitoring and formal data collection on student growth during small-group instructional interventions were found to be inconsistent. Time, student buy-in, and progress monitoring student learning were found to be barriers to successful implementation of small-group instruction. The interviewed teachers perceived the instructional videos and questions from Khan Academy as not always aligning with the ways in which they taught and assessed content knowledge. In addition, the COVID-19 pandemic made it more challenging for teachers to find time to implement Khan Academy in instruction. Consequently, the teachers used different online platforms that are better tailored to students' instructional needs. Literature discussed in the literature review support Khan Academy, but it must be used consistently in the classroom and done with fidelity in order for students to obtain skills in math and/or literacy.

The findings of this study may be used to inform and support high school building leaders in creating professional development trainings, ongoing coaching support, and collaboration days that better support teachers in implementing MTSS instructional interventions with fidelity. This will likely lead to more successful outcomes for high school students.

References

Aud, S., Wilkinson-Flicker, S., Kristapovich, P., Rathbun, A., Wang, X., & Zhang, J. (2013). *The condition of education 2013 (NCES 2013-037)* (ED542714). National Center for Education Statistics. http://files.eric.ed.gov/fulltext/ED542714.pdf

Ball, C. R., & Christ, T. J. (2012). Supporting valid decision making: Uses and misuses of assessment data within the context of RTI. *Psychology in the Schools*, *49*(3), 231-244. doi:10.1002/pits.21592

Batsche, G., Elliott, J., Graden, J. L., Grimes, J., Kovaleski, J. F., Prasse, D., & Tilly, W. D., III. (2005). *Response to intervention: Policy considerations and implementation.* National Association of State Directors of Special Education.

Batsche. G. M., Kavale, K. A., & Kovaleski, J. F. (2006). Competing views: A dialogue on response to intervention. *Assessment for Effective Intervention*, *32*(6), 461–510. https://doi.org/10.1177/15345084060320010301

Bean, R., & Lillenstein, J. (2012). Response to intervention and the changing roles of schoolwide personnel. *The Reading Teacher*, *65*(7), 491–501. https://doi.org/10.1002/TRTR.01073

Berevino, M. M., & Snodgrass, D. M. (1998). Revisiting cooperative learning…and making it work: Success with cooperative learning on the secondary level. *NASSP Bulletin, 82*(597), 64-67. https://doi.org/10.1177/019263659808259711

Brown-Chidsey, R., & Steege, M. W. (2005). *Response to intervention: Principles and strategies for effective practice.* The Guilford Press.

Bureau of Labor Statistics. (2014). *Occupational outlook handbook, 2014-15*. http://www.bls.gov/ooh/education-training-and-library/librarians.htm

Burns, M. K., Appleton, J. J., & Stehouwer, J. D. (2005). Meta-analytic review of responsiveness-to-intervention research: Examining field-based and research implemented models. *Journal of Psychoeducational Assessment*, *23*(4), 381–394. https://doi.org/10.1177/073428290502300406

Burns, M. K., Jacob, S., & Wagner, A. R. (2007). Ethical and legal issues associated with using response-to-intervention to assess learning disabilities. *Journal of School Psychology*, *46*(3), 263–279. https://doi.org/10.1016/j.jsp.2007.06.001

Castillo, J. M. (2014). Best practices in program evaluation in a model of response to intervention/multi-tiered system of supports. In P. L. Harrison & A. Thomas (Eds.), *Best practices in school psychology: Foundations* (pp. 329–342). National Association of School Psychologists.

Castillo, J. M., Dedrick, R. F., Stockslager, K. M., March, A. L., Hines, C. V., & Tan, S. Y. (2015). Development and initial validation of a scale measuring the beliefs of educators regarding response to intervention. *Journal of Applied School Psychology*, *31*(1), 1–30. https://doi.org/10.1080/15377903.2014.938282

Castillo, J. M., Hines, C. M., Batsche, G. M., & Curtis, M. J. (2011). *The Florida problem solving/response to intervention project: Year 2 evaluation report*. Educational and Psychological Studies. https://digitalcommons.usf.edu/cgi/viewcontent.cgi?article=1050&context=esf_facpub

Castro-Villarreal, F., Rodriguez, B. J., & Moore, S. (2014). Teachers' perceptions and attitudes about response to intervention (RTI) in their schools: A qualitative analysis. *Teaching and Teacher Education, 40,* 104–112. https://doi.org/10.1016/j.tate.2014.02.004

Cavalier, J. C., & Klein, J. D. (1998). Effects of cooperative versus individual learning and orienting activities during computer-based instruction. *Educational Technology, Research & Development, 46*(1), 5–17. https://link.springer.com/content/pdf/10.1007/BF02299826.pdf

Chitiyo, J. & May, M. E. (2018, Winter). Factors that may hinder the implementation of the

school-wide positive behavior intervention support model. *Journal of the American Academy of Special Education Professionals*. http://aasep.org/aasep-publications/journal-of-the-american-academy-of-special-education-professionals-jaasep/jaasep-winter-2018/factors-that-may-hinder-the-implementation-of-the-school-wide-positive-behavior-intervention-support-model/index.html

College Board. (2014). *The 10th annual: AP report to the nation*. https://secure-media.collegeboard.org/digitalServices/pdf/ap/rtn/10th-annual/10th-annual-ap-report-to-the-nation-single-page.pdf

Colorado Department of Education. (2019). *2019 PSAT and SAT State Achievement Results*. https://www.cde.state.co.us/assessment/2019_psat_sat_statesummaryachievementresults

Colorado Department of Education. (2021a). *Colorado SAT and PSAT Data and Results*. https://www.cde.state.co.us/assessment/cosatdataandresults

Colorado Department of Education. (2021b). *Multi-Tiered System of Supports (MTSS).* https://www.cde.state.co.us/mtss

Cook, C. R., Lyon, A. R., Kubergovic, D., Wright, D. B., & Zhang, Y. (2015). A supportive beliefs intervention to facilitate the implementation of evidence-based practices within a multi-tiered system of supports. *School Mental Health, 7*(1), 49–60. https://doi.org/10.1007/s12310-014-9139-3

Cowan, C. & Maxwell, G. (2015). Educators' perception of response to intervention implementation and impact on student learning. *Journal of Instructional Pedagogies, 16,* 1-11. https://files.eric.ed.gov/fulltext/EJ1069392.pdf

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

Davis-Bianco, S. (2010). Improving student outcomes: Data-driven instruction and fidelity of implementation in a response to intervention (RTI) model. *TEACHING Exceptional Children Plus*, *6*(5), Article 1. https://files.eric.ed.gov/fulltext/EJ907036.pdf

Desimone, L. M. & Pak, K. (2017). Instructional coaching as high-quality professional development. *Theory Into Practice*, *56*(1), 3-12. https://doi.org/10.1080/00405841.2016.1241947

Detrich, R. (2008). From policy to practice: IDEIA and evidence-based practice. In E. L. Grigorenko (Ed.), *Educating Individuals with Disabilities: IDEIA 2004 and Beyond* (pp. 85–114). Springer.

Donovan, M. S., & Cross, C. T. (2002). *Minority students in special and gifted education*. National Academy Press.

Dornyei, Z. (1997). Psychological processes in cooperative language learning: Group dynamics and motivation. *The Modern Language Journal*, *81*(4), 482–493. https://doi.org/10.1111/j.1540-4781.1997.tb05515.x

DuFour, R. (2004). Schools as learning communities: What is a professional learning community? *Educational Leadership, 61*(8), 6-11. http://www.siprep.org/uploaded/ProfessionalDevelopment/Readings/PLC.pdf

DuFour, R. DuFour, R. Eaker, R. & Many, T. (2010). *Learning by doing: A handbook for professional learning communities at work* (2nd ed). Solution Tree Press.

Duffy, H., & Scala, J. (2012). *A systemic approach to implementing response to intervention in three Colorado high schools*. National High School Center at the American Institutes for Research. https://files.eric.ed.gov/fulltext/ED532566.pdf

Dulaney, S. K., Hallam, P. R., & Wall, G. W. (2013). Superintendent perceptions of multi-tiered systems of support (MTSS): Obstacles and opportunities for school system reform. *AASA Journal of Scholarship and Practice*, *10*(2), 30–45. https://cacollaborative.org/sites/default/files/7.2.%20Dulaney_et_al_2013_Superintendent_perceptions_of_MTSS.pdf

Easterling, D., & Metz, A. (2016). Getting real with strategy: Insights from implementation science. *Foundation Review*, *8*(2), 97–115. https://doi.org/10.9707/1944-5660.1301.

Ervin, R. A., Schaughency, E., Matthews, A., Goodman, S. D., & McClinchey, M. T. (2007). Primary and secondary prevention of behavior difficulties: Developing a data-informed problem-solving model to guide decision making at a school-wide level. *Psychology in the Schools*, *44*(1), 7–18. https://doi.org/10.1002/pits.20201

Every Student Succeeds Act, Pub. L. No. 114-95, § 114 Stat. 1177 (2015). https://www.congress.gov/114/plaws/publ95/PLAW-114publ95.pdf

Foyle, H. C., & Lyman, L. (1988). *Cooperative learning strategies and children* (ED306003). ERIC. http://files.eric.ed.gov/fulltext/ED306003.pdf

Fuchs, D., & Deshler, D. D. (2007). What we need to know about responsiveness to intervention (and shouldn't be afraid to ask). *Learning Disabilities Research and Practice, 22*(2), 129–136. https://doi.org/10.1111/j.1540-5826.2007.00237.x

Fuchs, D., & Fuchs, L. S. (2006). Introduction to response to intervention: What, why, and how valid is it? *Reading Research Quarterly*, *41*(1), 93–99. https://www.jstor.org/stable/4151803

Fuchs, L. S., Fuchs, D., & Malone, A. S. (2016). Multilevel response-to-intervention prevention systems: Mathematics intervention at tier 2. In S. Jimerson, M. Burns, & A. VanDerHeyden (Eds.), *Handbook of Response to Intervention:* (pp. 309–328). Springer.

Gersten, R., Compton, D., Connor, C. M., Dimino, J., Santoro, L., Linan-Thompson, S., & Tilly, W. D. (2008). *Assisting students struggling with reading: Response to intervention and multi-tier intervention for reading in the primary grades.* National Center for Education Evaluation and Regional Assistance. https://www.trumbullesc.org/Downloads/rti_reading_pg_021809.pdf

Gerzel-Short, L., & Wilkins, E. A. (2009). Response to Intervention: Helping all students learn. *Kappa Delta Pi Record, 45*(3), 106–110. https://doi.org/10.1080/00228958.2009.10517298

Gresham, F. M. (2007). Evolution of the response-to-intervention concept: Empirical foundations and recent developments. In S. R. Jimerson, M. K. Burns, & A. M. VanDerHeyden (Eds.), *Handbook of Response to Intervention: The Science and Practice of Assessment and Intervention* (pp. 10–24). Springer. https://doi.org/10.1007/978-0-387-49053-3_2

Gutkin, T. B., & Curtis, M. J. (2009*).* School-based consultation: The science and practice of indirect service delivery. In T. B. Gutkin & C. R. Reynolds (Eds.), *The handbook of school psychology* (4th ed., pp. 591–635). John Wiley & Sons.

Hagans, K., & Powers, K. (2013). *Multitiered systems of support (MTSS): Recommendations for elimination of barriers to implementation with fidelity in California*. California State University. https://www.csulb.edu/sites/default/files/2013-mtss-81913-final_2013-09-03.pdf

Hagermoser Sanetti, M. H., & Collier-Meek, M. A. (2015). Data-driven delivery of implementation supports in a multi-tiered framework: A pilot study. *Psychology in the Schools, 52*(8), 815–828. http://dx.doi.org/10.1002/pits.21861

Hall, G. E., & Hord, S. M. (2015). *Implementing change: Patterns, principles and potholes* (4th ed.). Pearson.

Henderson, J. (2017). *Effect of degree of RTI/MTSS implementation on reading and*

mathematics achievement growth in a metropolitan school district. (Doctoral Dissertation, University of Kansas). Retrieved from http://search.proquest.com/docview/1925584438

Hertz-Lazarowitz, R., Kirkus, V., & Miller, N. (1992). *Interaction in cooperative groups: The theoretical anatomy of group learning*. Cambridge University Press.

Individuals with Disabilities Education Act of 2004, P.L. 108-446, 20 U.S.C. § 1400

Jansen, A. (2012). Developing productive dispositions during small-group work in two sixth-grade mathematics classrooms: Teachers' facilitation efforts and students' self-reported benefits. *Middle Grades Research Journal, 7*(1), 37–56. http://udel.edu/~jansen/Jansen_MGRJ_2012.pdf

Jenkins, J. R., Hudson, R. F., & Johnson, E. S. (2007). Screening for at-risk readers in a response to intervention framework. *School Psychology Review, 36*(4), 582-600. https://web-p-ebscohost-com.proxy.wm.edu/ehost/pdfviewer/pdfviewer?vid=1&sid=f6babe69-fda8-46d0-a3dc-97228daec5f2%40redis

Jimerson, S. R., Burns, M. K., & VanDerHeyden, A. M. (2007). Response to intervention at school: The science and practice of assessment and intervention. In S. R. Jimerson, M. K. Burns, & A. M. VanDerHeyden (Eds.), *Handbook of response to intervention: The science and practice of assessment and intervention* (pp. 3–9). Springer.

Johnson, D. W., Johnson, R. T., & Stanne, M. B. (2000). *Cooperative learning methods: A meta-analysis*. University of Minnesota.

Joint Committee on Standards for Excellence in Educational Evaluation. (2011). *The program evaluation standards*. Sage.

Jones, C. D., & Henriksen, B. M. (2013). Skills-focused small group literacy instruction in the first grade: an inquiry and insights. *Journal of Reading Education*, *38*(2), 25–30.

Khan Academy. (n.d.). *What is a mission?* https://s3.amazonaws.com/KA-share/Toolkit-photos/What_is_a_mission.pdf

Khan Academy. (2022). *Impact*. https://www.khanacademy.org/about/impact

Kohm, B., & Nance, B. (2009). Creating collaborative cultures. *Educational Leadership, 67*(2), 67–72. https://pdo.ascd.org/LMSCourses/PD13OC010M/media/Leading_Prof_Learning_M4_Reading301.pdf

Kratochwill, T. R., Clements, M. A., & Kalymon, K. M. (2007). Response to intervention: Conceptual and methodological issues in implementation. In S. R. Jimerson, M. K. Burns, & A. M. VanDerHeyden (Eds.), *Handbook of response to intervention: The science and practice of assessment and intervention* (pp. 25–52). Springer Science + Business Media.

Kruse, S. D. & Louis, K. S. (2009). *Building strong school cultures: A guide to leading change*. Corwin Press.

Lane, K. L., Oakes, W., & Menzies, H. (2010). Systematic screenings to prevent the development of learning and behavior problems: Considerations for practitioners, researchers, and policy makers. *Journal of Disability Policy Studies, 21*(3), 160–172. https://doi.org/10.1177/1044207310379123

Lange, C., Range, B., & Welsh, K. (2012). Conditions for effective data use to improve schools: Recommendations for school leaders. *International Journal of Educational Leadership Preparation*, *7*(3), 2-11. https://files.eric.ed.gov/fulltext/EJ997478.pdf

Leming, J. S., Ellington, L., & Porter-Magee, K. (2003). *Where did social studies go wrong?* Thomas Fordham Institute.

Light, D., & Pierson, E. (2014). Increasing student engagement in math: The use of Khan Academy in Chilean classrooms. *International Journal of Education and Development using ICT, 10*(2), 103–119. https://files.eric.ed.gov/fulltext/EJ1071280.pdf

Lichtman, M. (2006). *Qualitative research in education: A user's guide*. Sage.

Lukacs, K. (2015). "For Me, Change is not a Choice": The Lived Experience of a Teacher Change Agent. *American Secondary Education, 44*(1), 38–49. http://www.jstor.org/stable/43694225

Marion County Public Schools (2016). *Multi-tiered system of supports manual*. https://swmymarionportal.marion.k12.fl.us/sites/search/Pages/results.aspx?k=multi-tiered%20system%20of%20supports%20manual

Martinez, R., & Young, A (2011). Response to intervention: How is it practiced and perceived? *International Journal of Special Education, 26*(1), 44–52. https://files.eric.ed.gov/fulltext/EJ921184.pdf

McFarland, J., Hussar, B., Wang, X., Zhang, J., Wang, K., Rathbun, A., Barmer, A., Forrest Cataldi, E., & Bullock Mann, F. (2018). *The condition of education 2018*. National Center for Education Statistics. https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2018144

Mertens, D. M., & Wilson, A. T. (2012). *Program evaluation theory and practice: A comprehensive guide.* The Guilford Press.

Meyer, M. M., & Behar-Horenstein, L. S. (2015). When leadership matters: Perspectives from a teacher team implementing response to intervention. *Education and Treatment of Children, 38*(3), 383–402. https://doi.org/10.1353/etc.2015.0022

Morgan, H. (2014). Maximizing student success with differentiated learning. *Clearing House*, *87*(1), 34–38. https://doi.org/10.1080/00098655.2013.832130

Murphy, R., Gallagher, L., Krumm, A., Mislevy, J., & Hafter, A. (2014). *Research on the use of Khan Academy in schools: Research brief*. SRI International. https://www.sri.com/wp-content/uploads/pdf/2014-03-07_implementation_briefing.pdf

National Association of State Directors of Special Education. (2007). *Response to intervention: Research for practice*. https://www.nasdse.org/Portals/0/Documents/RtI_Bibliography2.pdf

National Association of School Psychologists. (n.d.). *ESSA and multitiered systems of support for decision-makers*. https://www.nasponline.org/research-and-policy/policy-priorities/relevant-law/the-every-student-succeeds-act/essa-implementation-resources/essa-and-mtss-for-decision-makers

National Center on Response to Intervention (2010). *Essential Components of RTI-A Closer Look at Response to Intervention*. U.S. Department of Education, Office of Special Education Programs, National Center on Response to Intervention

National High School Center, National Center on Response to Intervention, and Center on Instruction. (2010). *Tiered interventions in high schools: Using preliminary "lessons learned" to guide ongoing discussion*. Washington, DC: American Institutes for Research.

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

Nelson, J. R., Oliver, R. M., Hebert, M. A., & Bohaty, J. (2015). Use of self-monitoring to maintain program fidelity of multi-tiered interventions. *Remedial & Special Education*, *36*(1), 14–19. https://doi.org/10.1177/0741932514544970

No Child Left Behind Act of 2001, Pub. L. No. 107-110, § 115, Stat. 1425. (2002). https://files.eric.ed.gov/fulltext/ED556108.pdf

Office of Special Education and Rehabilitative Services. (2002). *A new era: Revitalizing special education for children and their families*. ERIC. https://files.eric.ed.gov/fulltext/ED473830.pdf

Pas, E., & Bradshaw, C. (2012). Examining the association between implementation and outcomes. *The Journal of Behavioral Health Services & Research, 39*(4), 417–433. https://link.springer.com/content/pdf/10.1007/s11414-012-9290-2.pdf

Pedersen, J. E., & Digby, A. D. (1995). *Secondary schools and cooperative learning: Theories, models, and strategies*. Routledge.

Planty, M., Hussar, W., Snyder, T., Kena, G., KewalRamani, A., Kemp, J., Bianco, K., Dinkes, R. (2009). *The condition of education 2009*. National center for education statistics. https://nces.ed.gov/pubs2009/2009081.pdf

Posny, A. (Greenbush T.V.). (2007). *Multi-tiered system of supports* [Video]. YouTube. https://www.youtube.com/watch?v=d0uQ0KWbHks

Project IDEAL. (2013). *Historical perspectives and context.* http://projectidealonline.org/v/historical-perspectives-context/

Public Law 108 - 446 - *Individuals with Disabilities Education Improvement Act of 2004*. (2004). https://www.govinfo.gov/app/details/PLAW-108publ446

Reeves, D. B. (2009). *Leading change in your school: How to conquer myths, build commitment, and get results.* ASCD.

Reeves, T. D., & Chiang, J.-L. (2018). Online interventions to promote teacher data-driven decision making: Optimizing design to maximize impact. *Studies in Educational Evaluation, 59*, 256–269. https://doi.org/10.1016/j.stueduc.2018.09.006

Rennekamp, R., & Nall, M. (2002). *Using focus groups in program development and*

evaluation. https://psd.ca.uky.edu/files/focus.pdf

Reschly, D. & Hosp, J. (2004). State SLD identification policies and practices [Electronic version]. *Learning Disabilities Quarterly*, 27, 197-213.

Renaissance Learning. (2015). *Star Assessments™ for math technical manual*. https://www.wtps.org/site/handlers/filedownload.ashx?moduleinstanceid=37941&dataid=46216&FileName=STAR%20Math%20Manual.pdf

Rinaldi, C. & Higgins-Averill, O. (2014). *Practical ways to engage all struggling learners: A multi-tiered instructional approach using hi-lo books*. Saddleback Publishing.

Roach, A. T., Lawton, K., & Elliott, S. N. (2014). Best practices in facilitating and evaluating the integrity of school-based interventions. In P. L. Harrison & A. Thomas (Eds.), *Best practices in school psychology: Data-based and collaborative decision making* (pp. 133–146). National Association of School Psychologists.

Robinson, K., & Aronica, L. (2016). *Creative Schools: The grassroots revolution that's transforming education*. Penguin.

Robinson, G. G., Bursuck, W. D., & Sinclair, K. D. (2013). Implementing RTI in two rural elementary schools: Encouraging beginnings and challenges for the future. *Rural Educator*, *34*(3), 1-9. https://doi.org/10.35608/ruraled.v34i3.394

Sailor, W. (2014). Advances in schoolwide inclusive school reform. *Remedial and Special Education, 36*(2), 94–99. https://doi.org/10.1177/0741932514555021

Saldaña, J. M. (2021). *The coding manual for qualitative researchers* (4th ed.). SAGE Publications.

Sanders, W. L., Wright, S. P., & Horn, S. P. (2007). Teacher and classroom context effects on student achievement: Implications for teacher evaluation. *Journal of Personnel Evaluation in Education, 11*(1), 57–67. https://link.springer.com/content/pdf/10.1023/A:1007999204543.pdf

Schniedewind, N., & Davidson, E. (2000). Differentiating cooperative learning. *Educational Leadership, 58*(1), 24–27. https://eric.ed.gov/?id=EJ614605

Shinn, M. R., Windram, H. S., & Bollman, K. A. (2016). Implementing Response to intervention in secondary schools. In Jimerson, S. R., Burns, M. K., & VanDerHeyden, A. M. *Handbook of response to intervention: The science and practice of multi-tiered systems of support* (2nd ed., pp. 121–141). Springer Science+Business Media.

Slavin, R. E. (1977). Classroom reward structure: An analytical and practical review. *Review of Educational Research, 47*(4), 633–650. https://doi.org/10.3102/00346543047004633

Slavin, R. E. (1980). Cooperative learning. *Review of Educational Research, 50*(2), 315–342. https://doi.org/10.3102/00346543050002315

Slavin, R. E. (1983). When does cooperative learning increase student achievement? *Psychological Bulletin, 94*(3), 429–445. https://doi.org/10.1037/0033-2909.94.3.429

Stockslager, K., Castillo, J.M., Brundage, A., Romer, N., & Childs, K. (2016). *Development of a school-level tool to monitor MTSS implementation.* [Paper presentation]. National Association of School Psychologists Annual Convention, New Orleans, LA, United States.

Stoll, L., Bolam, R., McMahon, A., Wallace, M., & Thomas, S. (2006). Professional learning communities: A review of literature. *Journal of Educational Change, 7*(4), 221-258. https://doi.org/10.1007/s10833-006-0001-8

Stuart, S. K., & Rinaldi, C. (2009). A collaborative framework for teachers implementing tiered instruction. *Teaching Exceptional Children*, *42*(2), 52–57. https://doi.org/10.1177/004005990904200206

Stufflebeam, D. L. (2000). The CIPP model for evaluation. In D. L. Stufflebeam, G. F. Madaus, & T. Kellaghan (Eds.), *Evaluation models* (2nd ed.). Kluwer Academic Publishers.

Sugai. G., & Horner, R. H. (2009). Defining and describing schoolwide positive behavior support. In W. Sailor, G. Dunlap, G. Sugai, & R. Horner (Eds.), *Handbook of Positive Behavior Support* (pp. 307-236). Springer.

Sugai. G., O'Keefe, B. V., & Fallon, L. M. (2015). A contextual consideration of culture and school-wide positive behavior support. *Journal of Positive Behavior Interventions, 14*(4), 197-208.

Taylor, B. M., Pearson, P. D., Clark, K. F., & Walpole, S. (1999). Center for the Improvement of Early Reading Achievement: Effective Schools/Accomplished Teachers. *The Reading Teacher*, *53*(2), 156–159. http://www.jstor.org/stable/20204767

Turnbull, H. (2005). Individuals with disabilities education act reauthorization: Accountability and personal responsibility. *Remedial and Special Education*, *26*, 320-326. https://doi.org/10.1177/07419325050260060201

Vaughan, W. (2002). Effects of cooperative learning on achievement and attitude among students of color. *Journal of Educational Research*, *95*(6), 359–364. https://doi.org/10.1080/00220670209596610

Wasik, B. (2008). When fewer is more: Small group in early childhood classrooms. *Early Childhood Educational Journal*, *35*(1), 516–521. https://doi.org/ 10.1007/s10643-008-0245-4

Webb, N. M. (1982). Group composition, group interaction, and achievement in cooperative small-groups. *Journal of Educational Psychology, 74*(4), 475–484. https://doi.org/10.1037/0022-0663.74.4.475

Webb, N.M. (1989) Peer-interaction and learning in small groups. *International Journal of Educational Research, 13*(1), 21-31. https://doi.org/10.1016/0883-0355(89)90014-1

Webb, N. M., & Palincsar, A. S. (1996). Group processes in the classroom. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of educational psychology* (pp. 841–873). Macmillan.

Werts, M. G., Carpenter, E. S., & Fewell, C. (2014). Barriers and benefits to response to intervention: Perceptions of special education teachers. *Rural Special Education Quarterly, 33*(2), 3–11. https://doi.org/10.1177/875687051403300202

Wilcox, K. A., Murakami-Ramalho, E., & Urick, A. (2013). Just-in-time pedagogy: Teachers' perspectives on the response to intervention framework. *Journal of Research in Reading, 36*(1), 75-95. https://doi.org/10.1111/j.1467-9817.2011.01494.x

Wood, C. L., Goodnight, C. I., Bethune, K. S., Preston, A. I., & Cleaver, S. L. (2016). Role of professional development and multi-level coaching in promoting evidence-based practice in education. *Learning Disabilities: A Contemporary Journal*, *14*(2), 159–170.

Zengin, Y. (2017). Investigating the use of the Khan Academy and mathematics software with a flipped classroom approach in mathematics teaching. *Educational Technology & Society, 20*(2), 89–100. https://www.jstor.org/stable/90002166

Zumeta, R. O. (2015). Implementing intensive interventions: How do we get there from here. *Remedial and Special Education*, *36*(2), 83–88. https://doi.org/10.1177/0741932514558935

APPENDIX A

Survey

Dear Survey Participant,

Your participation in a research project, "A Program Evaluation of Teachers Perceptions of Implementing Tier I Instructional Practices of Multi-Tiered System of Supports at a High School." The research is being conducted by Jay Samant, a doctoral student at the School of Education at the College of William & Mary, who is seeking information that will be useful in the high school setting. The purpose of the research is to examine teachers' perceptions of their current skills in implementing a multi-tiered system of support (MTTS), the factors that facilitate and the conditions that impede the implementation of Tier 1 MTSS interventions (small-group instruction and Khan Academy), and the extent to which teachers report they are using these two academic interventions in the classroom. The findings of this study will provide various parties—including the Director of MTSS for STRIVE Prep Schools, the Student Services team, curriculum directors, the CEO, and the School Building Principal—with information and recommendations to help develop the MTSS programming on the high school level.

MTSS is an umbrella term that includes a data-based problem-solving approach with tiered academic and behavioral interventions. Many existing initiatives, such as positive behavior intervention support (PBIS) and response to intervention (RtI), share the common components of data-based problem-solving approach. PBIS is a multi-layered data-based problem-solving approach intended to support and improve student behavior, whereas RtI is a well-known multi-tiered approach to supporting student academic achievement. In this study, an MTSS is defined as a systematic framework that utilizes data-based problem-solving and decision-making with

multi-layered instruction and interventions to integrate academic and behavior instruction and intervention in a continuum of evidence-based practices.

If you decide to participate in this research, you will be asked to answer questions in a survey on your perceptions of a data-based problem-solving approach, as well as your experience using it. The survey should take no more than 25 minutes to complete.

The risks of involvement in this study are minimal and include possible stress from answering school raised questions; however, to minimize these risks, you can exit the survey at any time. There are no direct benefits to participating in this study; however, your participation will contribute to educational research in the area of MTSS and the improvement of the program. Please print a copy of this cover letter as proof of your participation.

As a survey participant, the information you provide is anonymous; that is, no names or other identifiers will be collected. Qualtrics.com provides evaluators with an option to anonymize responses by removing panel information and IP addresses from collected responses. The evaluator will know if a participant has submitted a survey but will not be able to identify individual responses, which maintains anonymity for the survey participants. The results of this project will be coded in such a way that the respondents' identities will not be attached to the final form of this study. Should you have concerns, please review the privacy policy of Qualtrics.com before you begin.

Aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored in a secure location accessible only to the evaluator. Upon completion of the study, all information will be destroyed. Final aggregate results will be made available to participants upon request.

This survey is strictly voluntary; participants can exit the survey at any time by closing their web browser. Choosing not to participate will not affect your employment with STRIVE PREP.

If you have any questions or concerns regarding the study or your participation in the study, you may contact me, Jay Samant, by phone at (845) 701-6432 or by email at jsamant@striveprep.org. Alternatively, you can contact Dr. Grant at lwgran@wm.edu.

Thank you for your participation.

Sincerely,

Jay S. Samant

APPENDIX B

Survey

Blank Perceptions of RtI Skills Survey - Revised

Perceptions of RtI Skills Survey - Revised

1. **Your PS/RtI Project ID:** ⟶
   Your PS/RtI Project ID was designed to assure confidentiality while also providing a method to match an individual's responses across instruments. In the space provided (first row), please write in the last four digits of your Social Security Number followed by the last two digits of the year you were born. Then, shade in the corresponding circles.

0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

Directions: *Please read each statement about a skill related to assessment, instruction, and/or intervention below, and then evaluate YOUR skill level within the context of working at a school/building level. Where indicated, rate your skill separately for academics (i.e., reading and math) and behavior. Please use the following response scale:*

① = **I do not have this skill at all (NS)**
② = **I have minimal skills in this area; need substantial support to use it (MnS)**
③ = **I have this skill, but still need some support to use it (SS)**
④ = **I can use this skill with little support (HS)**
⑤ = **I am highly skilled in this area and could teach others this skill (VHS)**

The skill to:	NS	MnS	SS	HS	VHS
2. *Access* the data necessary to determine the percent of students in core instruction who are achieving benchmarks (district grade-level standards) in:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤

3. Use data *to make decisions* about individuals and groups of students for the:	
a. Core academic curriculum	① ② ③ ④ ⑤
b. Core/Building discipline plan	① ② ③ ④ ⑤
4. Perform each of the following steps when identifying the problem for a student for whom concerns have been raised:	
a. Define the referral concern in terms of a replacement behavior (i.e., what the student should be able to do) instead of a referral *problem* for:	
• Academics	① ② ③ ④ ⑤
• Behavior	① ② ③ ④ ⑤

The skill to:	NS	MnS	SS	HS	VHS
b. Use data to define the current level of performance of the target student for:					
• Academics	①	②	③	④	⑤
• Behavior	①	②	③	④	⑤
c. Determine the desired level of performance (i.e., benchmark) for:					
• Academics	①	②	③	④	⑤
• Behavior	①	②	③	④	⑤
d. Determine the current level of peer performance for the same skill as the target student for:					
• Academics	①	②	③	④	⑤
• Behavior	①	②	③	④	⑤
e. Calculate the gap between student current performance and the benchmark (district grade level standard) for:					
• Academics	①	②	③	④	⑤
• Behavior	①	②	③	④	⑤
f. Use gap data to determine whether core instruction should be adjusted or whether supplemental instruction should be directed to the target student for:					
• Academics	①	②	③	④	⑤
• Behavior	①	②	③	④	⑤
5. Develop potential reasons (hypotheses) that a student or group of students is/are not achieving desired levels of performance (i.e., benchmarks) for:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤
6. Identify the most appropriate type(s) of data to use for determining reasons (hypotheses) that are likely to be contributing to the problem for:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤
7. Identify the appropriate supplemental intervention available in my building for a student identified as at-risk for:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤

The skill to:	NS	MnS	SS	HS	VHS
8. Access resources (e.g., internet sources, professional literature) to develop evidence-based interventions for:					
a. Academic core curricula	①	②	③	④	⑤
b. Behavioral core curricula	①	②	③	④	⑤
c. Academic supplemental curricula	①	②	③	④	⑤
d. Behavioral supplemental curricula	①	②	③	④	⑤
e. Academic individualized intervention plans	①	②	③	④	⑤
f. Behavioral individualized intervention plans	①	②	③	④	⑤
9. Ensure that any supplemental and/or intensive interventions are integrated with core instruction in the general education classroom:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤
10. Ensure that the proposed intervention plan is supported by the data that were collected for:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤
11. Provide the support necessary to ensure that the intervention is implemented appropriately for:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤
12. Determine if an intervention was implemented as it was intended for:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤
13. Select appropriate data (e.g., Curriculum-Based Measurement, DIBELS, FCAT, behavioral observations) to use for progress monitoring of student performance during interventions:					
a. Academics	①	②	③	④	⑤
b. Behavior	①	②	③	④	⑤

Problem Solving/Response to Intervention
Developed by the Florida PS/RtI Statewide Project — http://floridarti.usf.edu

Perceptions of RtI Skills Survey - Revised

The skill to:	NS	MnS	SS	HS	VHS
15. Make modifications to intervention plans based on student response to intervention.	①	②	③	④	⑤
16. Collect the following types of data:					
a. Curriculum-Based Measurement	①	②	③	④	⑤
b. DIBELS	①	②	③	④	⑤
c. Access data from appropriate district- or school-wide assessments	①	②	③	④	⑤
d. Standard behavioral observations	①	②	③	④	⑤
17. Use technology in the following ways:					
a. Use electronic data collection tools (e.g., PDAs)	①	②	③	④	⑤
b. Graph and display student and school data	①	②	③	④	⑤

THANK YOU!

APPENDIX C

Consent Form for Interview

Interview Consent Form

Research project title: *A Program Evaluation of Teachers Perceptions of Implementing Tier I Instructional Practices of Multi-Tiered System of Supports at a High School*

Research investigator: Jay Samant

Research Participants name:

The interview will take approximately 45-60 minutes. We don't anticipate that there are any risks associated with your participation, but you have the right to stop the interview or withdraw from the research at any time.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken from William & Mary institution require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Please read the accompanying information sheet and then sign this form to certify that you approve the following:

- The interview will be recorded via zoom video and be transcribed.
- You will be sent the transcript and given the opportunity to correct any factual errors
- The transcript of the interview will be analyzed by a transcriber as a research investigator

• Access to the interview transcript will be limited to (Jay Samant)

• Any summary interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed

Quotation Agreement:

I also understand that my words may be quoted directly. With regards to being quoted, please initial next to any of the statements that you agree with:

	I wish to review the notes, transcripts, or other data collected during the research pertaining to my participation.
	I agree to be quoted directly.
	I agree to be quoted directly if my name is not published and a made-up name (pseudonym) is used.
	I agree that the researchers may publish documents that contain quotations by me.

By signing this form I agree that;

1. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;

2. The transcribed interview or extracts from it may be used as described above;

3. I have read the Information sheet;

4. I don't expect to receive any benefit or payment for my participation;

5. I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;

6. I have been able to ask any questions I might have, and I understand that I am free to contact the evaluator with any questions I may have in the future.

Participant Signature_____

Date: _____

Interview Consent Form

Research project title: *A Program Evaluation of Teachers Perceptions of Implementing Tier I Instructional Practices of Multi-Tiered System of Supports at a High School*

Research investigator: Jay Samant

Research Participants name:

The interview will take approximately 60 minutes. We don't anticipate that there are any risks associated with your participation, but you have the right to stop the interview or withdraw from the research at any time.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken from The College of William and Mary institution require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation. Would you therefore read the accompanying information sheet and then sign this form to certify that you approve the following:

• The interview will be recorded and a transcript will be produced

• You will be sent the transcript and given the opportunity to correct any factual errors

• The transcript of the interview will be analyzed by (Jay Samant) as research investigator

• Access to the interview transcript will be limited to (Jay Samant) and academic colleagues and researchers with whom he might collaborate as part of the research process

• Any summary interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed

Quotation Agreement:

I also understand that my words may be quoted directly. With regards to being quoted, please initial next to any of the statements that you agree with:

	I wish to review the notes, transcripts, or other data collected during the research pertaining to my participation.
	I agree to be quoted directly.
	I agree to be quoted directly if my name is not published and a made-up name (pseudonym) is used.
	I agree that the researchers may publish documents that contain quotations by me.

By signing this form I agree that;

1. I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;

2. The transcribed interview or extracts from it may be used as described above;

3. I have read the Information sheet;

4. I don't expect to receive any benefit or payment for my participation;

5. I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;

6. I have been able to ask any questions I might have, and I understand that I am free to contact the evaluator with any questions I may have in the future.

Participant Signature_____

Date: _____

VITA

Jay Subhash Samant

Profile

Name: Jay Subhash Samant

Born: Wales, United Kingdom

Educational Background

Ed.D. in Educational Policy, Planning, and Leadership

Post-graduate Certification in Educational Administration

The College of William and Mary 2012- Fall 2021

M.S. Special Education-Adolescence

Binghamton University Spring 2011

B.A. in Adolescence Education-History and Government

Daemen College Spring 2009

Related Experience

STRIVE Prep-RISE High School 2016-Present

Founding High School Assistant Principal

Hampton City Schools Administrative Center

Special Education Coordinator 2015-2016

Phoebus High School 2011-2015

Special Education Instructional Leader/Teacher