

# Multi-Tiered Systems of Support Preservice Residency: A Pilot Undergraduate Teacher Preparation Model

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## *Abstract*

*This case study examined the implementation of a novel nontraditional teacher preparation program, “Multi-Tiered Systems of Support Preservice Residency Project” (MTSS-PR). The two-year program placed general and special education composite undergraduate majors full time in high-need schools implementing evidence-based systems of behavioral (Positive Behavioral Interventions and Supports) and academic support (Response to Intervention). Project participants received substantial training and practice in Tier 1 core instruction, Tier 2 interventionist activities, and Tier 3 interventions for students with special needs. The effectiveness of the program was evaluated through a district-wide teacher appraisal, measuring teacher-delivered opportunities to respond, ratio of interactions, student engagement, and participant and principal interviews. Results indicated that the MTSS-PR participants not only outperformed other new teachers on the district appraisal, they also outperformed other veteran teachers. At the conclusion of the project, both the participating teachers and their principals scored the project high on a measure of social validity. Methodological limitations exist, however results of the case study have promising implications for teacher preparation that infuses residency-based models within evidence-based practice.*

*Keywords: multi-tiered systems of support, preservice preparation*

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## Introduction

Schools across the country are facing increasing levels of accountability for improved student outcomes related to a growing number of local and national initiatives (e.g., literacy, numeracy, special education, safe schools, character education, and vocational and postsecondary transitions). The reauthorization of the Individuals with Disabilities Education Act and legislation of No Child Left Behind both codify accountability for outcomes and mandate the use of evidence-based educational practices. However, with shrinking resources and growing needs, schools struggle to identify and implement the evidence-based practices that result in the biggest impact on student outcomes.

One particularly large challenge in American education is increasing the supply of effective teachers with a thorough foundation in evidence-based practices, defined as practices with research support that are implemented with professional judgment while accounting for client values and context (Spencer, Detrich, & Slocum, 2012). This is true for both general education and special education, and is particularly apparent in high-need school districts and high-demand subject areas (Connelly, Rosenberg, & Larson, 2014). There is a great deal of controversy over how best to recruit, prepare, develop, and retain teachers who can effectively deliver the practices necessary for improved student outcomes. This has led to a proliferation of alternative teacher preparation models (Connelly et al., 2014; National Research Council, 2010). Connelly et al. (2014) indicated that nearly one-third of all teachers hired today participate in an alternative teacher preparation program. These alternative models are characterized by non-traditional approaches that bypass many of the requirements of traditional university-based teacher preparation programs (Loeb, 2008, Rosenberg & Sindelar, 2005). Rosenberg and Sindelar (2005) noted that alternative approaches differ from traditional approaches on the length and structure of the preparation program, the delivery mode, and the candidate population. The length of these programs is often shorter, including more field-based work and less course-work than traditional programs. The required courses are often delivered in the schools where the candidates work, or through distance education technology. Finally, these programs are often designed to attract new populations to teaching such as military personnel or individual's seeking a career change.

Overall, there is little evidence to suggest that alternative approaches are any more effective than traditional teacher education approaches in increasing the quantity of teachers in high demand subject areas, retaining teachers in the workforce, or preparing teachers who engage in practices that result in improved student outcomes (Connelly et al., 2014; National Commission on Teaching and America's Future, 1996; Rosenberg et al., 2009). This lack of evidence may be related to the broad range of alternative teacher preparation programs in these analyses and methodological problems in the available research (Connelly et al., 2014). In one study, Humphrey, Wechsler and Hough (2008) compared seven high profile alternative teacher preparation programs (e.g., Teach for America, NYC Teaching Fellows, and Teacher Education Institute (TEI) in Elk Grove, California). In general, Humphrey et al. (2008) found that teachers placed in schools with positive climates (e.g., strong professional collegial environments and supportive leadership) were more likely to decide to stay in teaching than those in challenging school contexts. Scores on knowledge for teaching reading and mathematics increased from pretest to end of year posttests for participants in each alternative preparation model. However,

gain scores on knowledge for teaching reading and mathematics for TEI participants were twice that of participants in any other program. Humphrey et al. (2008) attributed the difference in growth to two factors. First, the TEI coursework focused on literacy and numeracy content and methods throughout the two-year program. Second, the participants in the TEI program were not solely responsible for a classroom as in the other alternative preparation models. Rather, throughout the first-year of their two-year preparation program, TEI participants worked in residence with master teachers who ensured linkage between coursework and classroom application.

In a more recent study, Papay, West, Fullerton, and Kane (2012) evaluated the effectiveness of graduates of the Boston Teacher Residency program (BTR). Similar to the TEI program, the BTR candidates were paired with a mentor teacher for a year or more. The candidates were provided with a streamlined set of courses in collaboration with a partner university that lead to a master's degree, and the candidates were provided tuition support and a stipend in exchange for a commitment to teach in the district for three to five years. Papay et al. (2012) reported that the BTR graduates were initially no more effective than other new teachers at raising student test scores in reading and mathematics. However, by their fourth and fifth years, the BTR graduates outperformed other teachers at the same level and veteran teachers in mathematics by as much as 7%, and the BTR graduates had higher retention rates than non-BTR graduates. While the study had a number of limitations (i.e., limited sample size and large variation in performance among graduates), alternative teacher preparation that features a residency with strong building based-mentors appears promising.

Overall, it appears that alternative preparation programs with the following characteristics are more likely to produce effective teachers. First, programs that provide frequent on-going support from strong mentors and Institute of Higher Education supervisors are likely to produce teachers with effective instruction and management skills (Grossman, 2010; National Council for Accreditation of Teacher Education, 2010). Second, programs that place candidates in schools that are collegial, well-functioning, and built on evidence-based practices are likely to produce teachers who stay in the field longer (Humphrey et al., 2008; Sindelar, Brownell, & Billingsley, 2010) and become more adept practitioners (Lignugaris/Kraft & Harris, 2014). Finally, teachers are more likely to effectively implement evidence-based practices when field experiences remain the central focus of the teacher preparation program, and the coursework and seminars are designed to enrich their understanding of the instruction and management practices that support the evidence-based model (Grossman, 2010; National Council for Accreditation of Teacher Education, 2010).

### **Purpose of the Case Study**

The purpose of this study is to describe a pilot residency-based alternative teacher preparation model developed to prepare teachers to work within high-need schools employing evidence-based practices using a blended university and residency-based approach. The Multi-Tiered Systems of Support Preservice Residency (MTSS-PR) is uniquely different from other residency programs because it features undergraduate preservice teachers rather than post-baccalaureate candidates. University coursework is reorganized to complement the participant's work in the participating schools. It also infuses preservice teachers into schools that utilize evidence-based

school-wide systems that blend Response to Intervention (RtI) and Positive Behavioral Interventions and Supports (PBIS). Students in the project are prepared in three tiers of academic and behavior support, and work full-time in schools for two years implementing evidence-based practices in special education, general education, and the targeted interventions in between. University faculty provide professional development and technical assistance to the participating schools and two years of the preservice teacher coursework is streamlined for district implementation.

### **Participating District and Elementary Schools**

Three elementary schools within one Mountain West school district participated in the pilot study. The district includes 20 schools, and is a high-poverty local educational agency (LEA) with 20% or more of the children served from families with incomes below the poverty line. This estimate is based on data published by the U.S. Census Bureau's Small Area Income and Poverty Estimates program. In 2012, 26% of the children in the district were from families with incomes below the poverty line. An average of 75% of the children in the district received free and reduced lunch and 19 of 20 schools in the district were in the top quartile of schools in the state with respect to poverty level. As with the rest of the district, the three participating schools included students from a broad range of cultures (60% Hispanic; 5% Asian, Black, American Indian, or Pacific Islander). School 1 had 534 students, 79% of whom received free and reduced lunch. School 2 had 804 students, 77% of whom received free and reduced lunch. School 3 had 624 students, 95% of whom received free and reduced lunch.

### **MTSS Implementation in the Schools**

Each of the participating schools utilized a Multi-tiered Systems of Support (MTSS) model. MTSS involves the integration of two evidence-based practices: Response to Intervention (RtI) and Positive Behavioral Interventions and Supports (PBIS). The MTSS system is built on the U.S. Public Health Service's conceptual multi-tier pyramid model of prevention, involving primary, secondary, and tertiary levels of support (Walker et al., 1997). A number of states including California, Kansas, Florida, Michigan, Oregon, and Utah have adopted an MTSS framework in an endeavor to more cohesively, comprehensively, and coherently meet the academic and behavioral needs of all learners.

#### ***Response to Intervention (RtI)***

The RtI component of MTSS is an evidence-based and widely disseminated school-wide model for providing effective academic intervention to all students in the school (Batsche et al., 2005; Fuchs & Fuchs, 2006). RtI includes universal screening of all students; high-quality, multi-tiered instruction and interventions matched to students' needs; an integrated system for frequent progress-monitoring; and data-based decision making at each tier of service delivery (Batsche et al., 2005; Gresham, 2005). RtI has been shown to be effective in improving student performance in high need schools (Hagans, 2008), and all of participating schools received professional development and technical assistance around RtI through the Reading First Initiative, implemented over a five year period. In addition to the five critical areas of reading (phonemic awareness, phonics, fluency, vocabulary, and comprehension) that formed the instructional

foundation for Reading First classrooms, a cycle of tiered assessment was also implemented, including screening of all students, the diagnosis of specific areas of strength and weakness for struggling students, and intervention along with frequent progress-monitoring for at-risk students. The Reading First project also incorporated the assistance of reading coaches assigned to every school building. The coaches assisted teachers in their implementation of best practices, modeled effective instruction, observed and provided feedback, and led bi-weekly grade-level data analysis teams in which the teachers discussed student progress and made plans for how to intervene with struggling students.

### ***Positive Behavioral Interventions and Supports (PBIS)***

PBIS is the second evidence-based component of MTSS, and like RtI, features a continuum of supports for students within the three-tiered prevention logic (Kutash, Duchnowski, & Lynn, 2006). These systematic supports focus on the prevention of problem behavior, use of empirically supported behavioral interventions, application of local data-based decision making, establishment of local implementation capacity, outcome-based evaluation, and use of continuous professional development (Sugai & Horner, 2006). Similar to RtI, PBIS has demonstrated positive effects in high-need schools and districts (Morrissey, Bohanon, & Fenning, 2010; Vincent, Swain-Bradway, Tobin, & May, 2011).

Each of the MTSS-PR schools received their professional development and technical assistance in PBIS through the Utah Behavior Initiative (UBI), a state initiative designed to provide professional development, coaching, and technical assistance. Each of the MTSS-PR schools were participants in the UBI project over a five year period, and each received ongoing support from a district PBIS coach. Prior to the project, each school met an 80% criterion on the School-wide Evaluation Tool (Todd et. al, 2003), demonstrating their sustained implementation of PBIS.

### **The Typical University Preservice Preparation Program**

MTSS-PR participants were recruited from an undergraduate on-campus teacher education program in the Mountain West. The program typically starts in the sophomore year of the undergraduate sequence, and potential special education teachers complete an elementary education block that includes a foundations class as well as initial practicum experiences. During their junior year, preservice teachers begin their special education preparation. During the fall semester, students complete coursework in the afternoon while in the morning they teach direct instruction reading to elementary-age students in a resource room for approximately one hour each day (one daily lesson), five days a week. Before the students begin teaching in their practicum sites, each student must “check-out” with university faculty, demonstrating their ability to deliver direct instruction effectively. This “check-out” takes approximately three weeks at the beginning of the semester. Once they are cleared to teach, weekly observations are conducted by supervisors, observation scores are calculated, and face-to face feedback is provided. The Spring semester follows a similar schedule as in the Fall, except that the students teach mathematics in secondary settings.

During the second year of the program (senior year), the preservice teachers complete their remaining special education coursework and a block of elementary education classes, including

methods and practica in language arts, reading, social studies, and mathematics. The practica involve observation in the general education classroom instruction on a daily basis along with the delivery of several lessons in each content area. Finally, during the spring semester of their senior year, students complete a composite student teaching assignment in which they teach full time under the supervision of a cooperating teacher. Students acquiring the composite special education and general education degree spend half of the semester teaching in a general education classroom and half of the semester teaching in a special education environment.

### **The MTSS-PR Experience**

#### ***Year 1***

To create an effective and efficient residency-based experience, several changes were made to the typical university preservice preparation program. First, the delivery of university coursework was streamlined, and began during the Summer term prior to the junior year rather than the Fall semester. This included coursework in Direct Instruction as well as basic classroom management, which allowed participating preservice teachers to be ready to teach the first day of school in the Fall. Also, before the school year began the MTSS-PR participants attended school meetings and trainings, which provided stronger personal connections with their site, administrators, and other teachers. Then, during the academic year, university coursework was delivered during after-school hours, often through distance education technology (see Table 1 for full MTSS-PR course sequence).

A second key difference between the MTSS-PR and the typical university preservice preparation program involved the junior-year practicum sequence. Unlike the university program, which has preservice teachers deliver daily one hour direct instruction lessons, MTSS-PR participants were infused within their schools full time. For 17.5 hours a week, participants were hired by the school district as Tier-2 interventionists. They provided supplementary mathematics and language arts instruction to identified low performing students in small group arrangements. They also served as coordinators for the implementation of Check-in Check-out (CICO; also known as the Behavior Education Program; Crone, Horner, & Hawken, 2010). CICO is a Tier 2 behavioral intervention for students not responding to the Tier 1 behavioral supports. CICO provides frequent feedback and contingencies for meeting school-wide expectations. It involves checking-in with an adult (coordinator) in the morning, checking-out with that adult at the end of the day, and accumulating points throughout the day on a daily progress report.

The remaining 22.5 hours each week in the school involved one hour per day of direct instruction with small groups of students in the resource room (much like the typical university experience), as well as additional time in the general education classroom, working closely with a mentor teacher to deliver lessons associated with the university's elementary education requirements. As with the on-campus program, university supervisors conducted weekly observations and provided feedback to MTSS-PR participants throughout the year.

Table 1

*Multi-Tiered Systems of Support Preservice Residency: Course Sequence*

Year/Term	Credits
<b>Year 1: Summer</b>	<b>6 total</b>
ELED 4040: Teaching Reading II/Prac	3
SPED 5790: Intermediate Classroom and Behavior Management	3
<b>Year 1: Fall</b>	<b>14 total</b>
SPED 5790 ST: Teaching Read/Lang/Math	3
SPED 5410: Prac: Direct Instr. Reading	3
ELED 4050: Social Studies Methods/Prac	3
ELED 4030: Language Arts Methods/Prac	3
SPED 5790 ST: Classroom Management and Social Skills	2
<b>Year 1: Spring</b>	<b>16 total</b>
SPED 5340: Seminar: Teach Math	3
SPED 5060: Working with Parents/Prac	3
SPED 5430: Math Prac	4
ELED 4060: Teaching Math/Prac	3
ELED 4000: Teaching Science/Prac	3
<b>Year 2: Summer</b>	<b>8 total</b>
SPED 5320: Transition & Soc. Skills	1
SPED 5070: Policies and Procedures	3
SPED 5330: Eligibility Assessment	1
SPED 5530: Assistive Technology	3
<b>Year 2: Fall</b>	<b>15 total</b>
SPED 5210: Student Teaching/Internship	6
ART 3700: Arts Education	3
ELED 5100: Student Teaching/Internship	6
	<b>59 total</b>

**Year 2**

During the second year of MTSS-PR (senior year), rather than complete a semester of student teaching under the supervision of mentor teachers, project participants were hired as full time interns and given their own general education classrooms. Because of their increased time in the schools doing observations, classroom activities, and Tier 2 interventionist duties during year 1, MTSS-PR participants were prepared to take on the full-time teaching role. They were still required to complete student teaching requirements, including bi-weekly university supervision observations and a student teaching portfolio. They also received ongoing support from a mentor teacher in the school who met with them regularly to discuss data and ongoing student challenges. However, by all other accounts the participants were considered first year teachers and were compared to other first year teachers in the district appraisal.

## **MTSS-PR Recruitment**

To be accepted into the MTSS-PR, students needed to: (a) be accepted into the university's composite degree program (both special education and general education acceptance), (b) pass the PRAXIS II elementary education examination, and (c) be willing to work in a high-need district. Of the eight composite majors accepted into the on-campus special education and elementary education major, three volunteered to participate in the current case study. All three participants were female, White, and 20 years old. Participant application GPA's ranged from 3.09 to 3.83 and their composite ACT scores ranged from 18 to 27. Based on the GPA, one participant was ranked in the lowest quartile relative to her elementary education peers and two participants were ranked in the third quartile.

## **Case Study Assessment**

Three evaluation strategies were employed in this case study: (1) a district appraisal, (2) social validity surveys, and (3) participant interviews.

### ***District Appraisal***

To assess the promise of MTSS-PR and better support all teachers in the district, instructional coaches from the participating district conducted a yearly teacher appraisal, including observations of all teachers in the district. This appraisal served as the case study performance measure for comparing the MTSS-PR preservice teachers with other first year teachers and veteran teachers in the district. In order to avoid scoring bias, the instructional coaches remained blind to participant involvement in the project.

A total of 391 veteran teachers were included in the district assessment; 87% of these teachers were female, 1.7% were Asian, 1.2% were African American, 6.1% were Hispanic, and 90.2% were non-Hispanic White. In addition, 14 new district teachers (other than the MTSS-PR participants) were included in the assessment. All 14 of these teachers were female, two were Hispanic, and the other 12 were non-Hispanic White. Three were first grade teachers, four were second grade teachers, three were third grade teachers, two were fourth grade teachers, and two were fifth grade teachers.

Three key teacher skills were measured in the appraisal: opportunities to respond, ratio of positive to negative student interactions, and student time on task. Each of these skills is a foundational evidence-based practice that supports improved student achievement and all three areas were scored on a four-point Likert scale, from 1 (minimally proficient) to 4 (exemplary). The appraisal measure is provided in Figure 1.



<b>Teacher:</b> _____ <b>School:</b> _____ <b>Date:</b> _____			
<b>Opportunities to Respond (Observe for 10 Minutes)</b>			
<b>Teacher uses effective student engagement strategies to promote all students' active and productive engagement in rigorous, relevant learning.</b>			
<b>1 Minimally Proficient</b>	<b>2 Partially Proficient</b>	<b>3 Proficient</b>	<b>4 Exemplary</b>
The teacher provides <b>fewer than 10</b> opportunities to respond during a 10-minute period to promote active engagement and increase time on task.	The teacher provides <b>10-24</b> opportunities to respond during a 10-minute period to promote active engagement and increase time on task.	The teacher provides <b>25-39</b> opportunities to respond during a 10-minute period to promote active engagement and increase time on task.	The teacher provides <b>40 or more</b> opportunities to respond during a 10-minute period to promote active engagement and increase time on task.
<b>Total Marks in Each Category</b>			<b>Overall</b>
<b>Group*</b> _____	<b>Choral</b> _____	<b>Individual</b> _____	<b>Total</b> _____
			<b>Final Score</b> _____

<b>Ratio of Interactions (Observe for 10 Minutes)</b>			
<b>1 Minimally Proficient</b>	<b>2 Partially Proficient</b>	<b>3 Proficient</b>	<b>4 Exemplary</b>
The teacher provides one or zero positive statements for every negative or corrective statement OR the teacher has fewer than 10 total interactions.	The teacher consistently provides two praise statements for every negative or corrective statement. There are a minimum of 10 interactions in a ten-minute period with a 2:1 ratio.	The teacher consistently provides three praise statements for every negative or corrective statement. There are a minimum of 10 interactions in a ten-minute period with a 3:1 ratio.	The teacher consistently provides four or more praise statements for every negative or corrective statement. There are a minimum of 10 interactions in a ten-minute period with a 4:1 ratio.
<b>Total Praise (Positive)</b> _____	<b>Total Corrective/Negative</b> _____	<b>Overall Ratio (Pos:Neg)</b> _____	<b>Final Score</b> _____

<b>Time on Task (Observe for 5 Minutes)</b>			
<b>1 Minimally Proficient</b>	<b>2 Partially Proficient</b>	<b>3 Proficient</b>	<b>4 Exemplary</b>
Less than $\frac{45}{60}$ Plus Marks = 0% – 75%	$\frac{45}{60} - \frac{50}{60}$ Plus Marks = 75% – 84%	$\frac{51}{60} - \frac{56}{60}$ Plus Marks = 85% – 94%	$\frac{57}{60} - \frac{60}{60}$ Plus Marks = 95% – 100%
<b>Total Plus Marks</b> _____	<b>Total Minus Marks</b> _____	<b>Final Percent</b> _____	<b>Final Score</b> _____

Figure 1. MTSS-PR District Appraisal Measure

*Opportunities to Respond (OTR).* OTRs are an evidence-based indicator of effective teaching practice for general and special education teachers (Council for Exceptional Children, 1987; Haydon et al., 2010; Moore-Partin, Robertson, Maggin, Oliver, & Wehby, 2010; Sutherland, Alder, & Gunter, 2003). The Council for Exceptional Children (CEC) provided guidelines for teachers regarding optimal rates of OTR. During instruction of new material, teachers should elicit four to six responses per minute from students, who should consequently respond with 80% accuracy. During independent practice, students should make 8 to 12 responses per minute, with 90% accuracy (Council for Exceptional Children, 1987). Eliciting frequent responses from students allows the teacher to adjust the lesson based on student feedback, increase the quality of the lesson, and increase the attentiveness of students. Increased rates of OTRs are related to positive effects on both the academic outcomes and the classroom behavior of students (Moore-Partin, et al., 2010; Sutherland et al., 2003). Reading outcomes are affected positively as indicated by increased percentages of reading responses (Haydon et al., 2010), increased mastery of reading words (Skinner, Smith, & McLean, 1994), increased rates of words read correctly, and decreased rates of words read incorrectly (Skinner & Shapiro, 1989). Mathematics outcomes are also positively affected, as measured by the percentage of problems correct per minute (Skinner, Ford, & Yunker, 1991), the number of digits correct per minute (Skinner, Belfiore, Mace, Williams-Wilson, & Johns, 1997), and the number of problems completed (Skinner et al., 1997). Finally, positive effects have also been reported for task engagement (Haydon et al., 2010) and decreased disruptive behavior (Haydon et al., 2010; Moore-Partin et al., 2010; Sutherland et al., 2003).

*Ratio of Interactions.* Researchers suggest that positive feedback and a 3:1 (at a minimum) ratio of positive to negative interactions is also an evidence-based indicator of effective teaching practice (Hattie & Timperley, 2007; Silva, Yuille, & Peters, 2000). Increased positive feedback results in decreased problem behavior (Hamre & Pianta, 2001), increased appropriate behavior and instructional time (Ferguson & Houghton, 1992), increased student intrinsic motivation (Cameron & Pierce, 1994), and competence development (Brophy, 1981; Gottfried, 1983). Researchers also suggest that students are more likely to behave well and work hard to meet expectations when student-teacher relationships are positive and respectful (Borich, 2004; Brophy, 1981; Reinke, Lewis-Palmer, & Martin, 2007).

*Student Time-on-Task.* Time-on-task refers to the amount of time students spend attending to school-related tasks, such as following directions and engaging in learning activities. Time-on-task is also referred to as “engaged time.” Researchers report that students spend about 32% to 42% of time on-task (Hofmeister & Lubke, 1990). In addition, researchers report a strong positive relationship between student achievement and time on task (Fisher, 2009; Rock & Thread, 2009). Finally, high engagement in learning is linked to reduced dropout rates and increased levels of student success (Kushman, Sieber, & Heariold-Kinney, 2000).

### ***Social Validity Surveys***

In addition to the district appraisal, it was also important to assess the value of the MTSS-PR experience from the perspective of the participating preservice teachers and their principals. First, each of the MTSS-PR teachers and their principals completed a five-item social validity questionnaire about the MTSS-PR experience. Questions assessed the extent to which MTSS-PR

was perceived to: (a) improve teaching performance, (b) improve outcomes for students, (c) be an important part of their training, (d) be worth recommending to others, and (e) be difficult to complete compared to other preservice experiences. Scores on the questionnaire were recorded on a Likert-type scale from 1 to 6 with higher scores indicating a more favorable impression.

### ***Participant Interviews***

Once the surveys were completed, a second follow-up interview was conducted with each participant to assess: (a) the features of MTSS-PR that were most valuable, (b) the features of the project that were most challenging, and (c) the perceived benefits of MTSS-PR for the school and the district. At the end of each interview, the interviewer read responses back to interviewees to allow them the opportunity to add, modify, or clarify them. All interviews were conducted over a two month period following completion of the MTSS-PR project.

## **Results**

### ***District Appraisal Results***

Results of the district appraisal indicated powerful differences between MTSS-PR participants, other new teachers in the district, and other veteran teachers in the district on all three appraisal measures. On opportunities to respond, the three MTSS-PR participants received a full score of 4 out of 4, while other new teachers in the district ( $n = 14$ ) received an average of 2.43 out of 4 ( $SD = 0.65$ ). Other veteran teachers ( $n = 391$ ) received an average of 3.22 ( $SD = 0.68$ ). For ratio of interactions, the three MTSS-PR participants received an average score of 3.67 out of 4 ( $SD = 0.58$ ), while other new teachers received an average of 2.57 ( $SD = 1.02$ ), and veteran teachers received an average of 3.18 ( $SD = 0.87$ ). Finally, as with the previous measures, student on-task behavior results indicated substantial differences between the three groups with MTSS-PR participants averaging 3.33 ( $SD = 0.58$ ) out of 4. Other new teachers averaged 2.00 out of 4 ( $SD = 0.78$ ), and veteran teachers averaged 3.20 out of 4 ( $SD = 0.75$ ).

### ***Survey Results***

At the conclusion of the case study, MTSS-PR participants and their principals completed a five-item social validity questionnaire on a six-point scale about the MTSS-PR experience with higher scores indicating a higher satisfaction with the project. The mean rating for “MTSS-PR improved my teaching performance” was 5.6 (range 5 to 6), the mean rating for “MTSS-PR improved outcomes for students” was 5.8 (range 5 to 6), the mean rating for “MTSS-PR was an important part of training” was 5.8 (range 5 to 6), and the mean rating for “MTSS-PR was worth recommending to others” was 6.0. In addition, the social validity questionnaire also resulted in a mean of 3.2 (range 2 to 4) for “MTSS-PR was difficult to complete compared to other preservice training experiences,” indicating that the project was minimally resource intensive compared to other preservice activities.

## *Interview Results*

Within one month of survey completion, a second follow-up interview was conducted with each participant to assess: (a) the features of MTSS-PR that were most valuable, (b) the features of the project that were most challenging, and (c) the perceived benefits of MTSS-PR for the school and the district.

*Valuable Features of UMTSS-PR.* The first question asked of project participants during the follow-up interview was: “What were the most valuable features of MTSS-PR?” Responses to this question were similar across principals and preservice teachers, and included three features. First, responses indicated that being in the schools full-time from the first day of the school-year was helpful for building relationships with administrators, teachers, and students. As noted by one participating preservice teacher, “It really made me feel like I belonged here. The principal knows me and the teachers know me and the kids know me. They believe that I actually make a difference.”

The second frequent response involved the value of training in all three tiers of support. Both the teachers and their principals indicated that teaching in general education classrooms (Tier 1), in Tier 2 intervention settings, and in special education resource rooms, gave the preservice teachers a unique set of skills that made them very strong teachers for all the students in their school. As stated by one of the principals, “she [the preservice teacher] knows all three parts of the triangle [three tiers of support]... and knows how to modify instruction for kids behind in class because she spent an entire year using strategies effective for those kids.”

*Challenging Features of MTSS-PR.* The second question of the interview, “What were the most challenging features of MTSS-PR?” resulted in different responses from principals and teachers. Only one of the three principals indicated a significant challenge in the project, stating “it was hard to make sure we had a spot for her.” Because the project involved two years of paid positions, first as an interventionist and then as a full-time teacher, at times it was difficult to know if and where a full-time position would be available.

Unlike their principals, MTSS-PR preservice teacher responses to the second question always included two components. First, teaching full time then taking classes after school occasionally resulted in feelings of being overwhelmed: “The school was my life. I would teach, go to class, turn in assignments, then go to sleep, then do it all again the next day.” Second, all three participating preservice teachers indicated that much was expected of them right when they started school each year:

in our first year we had to teach in sped [special education], regular ed [general education], and interventions [Tier 2 supports]. In the second year I had to teach my own class and set up my own classroom and tell my aides what to do, and talk to parents, and everything else a teacher does... we had to learn so much so fast.

*MTSS-PR Benefits.* The final question of the interviews asked participants, “What do you see as the biggest benefits of MTSS-PR for the school and district?” Here as with the first question, principals and preservice teachers responded very similarly. First, all of the interviewees praised the idea of having preservice teachers invested in schools prior to full-time employment. They

indicated that the MTSS-PR model provided both a higher quantity and quality of experiences. In the words of one principal, “They are so much better new teachers because they have already been here so long doing the things we do... This will really help [the district] get more teachers ready to teach in our schools.” Second, all of the interviewees noted the value in preparing school staff to work in all three tiers of support: “I wish all my staff could do what she [the preservice teacher] does. She understands how to work with her instructional aides and help them deliver good interventions.”

## **Discussion**

Results of this case-study suggest that the MTSS-PR approach for teacher preparation has promise for preparing undergraduate teachers to implement effective teaching practices within evidence-based systems of student support. The three teachers in the MTSS-PR project received scores on the district appraisal higher than other new teachers as well as veteran teachers in the district. Of equal importance, student participants in the project and their principals were extremely positive about both the efficacy and efficiency of the project. They indicated that the project was extremely valuable in their preparation as a teacher.

### ***Implications for Practice***

A distinguishing feature of this model is that the preservice participants learned to apply their instructional skills within an evidence-based school-wide system (MTSS). During the first year of preparation participants received didactic as well as supervised, practice-based training in effective teaching practices and behavior management at all three tiers of support including Tier 1 core instruction and support, efficient Tier 2 academic and behavioral interventions, and Tier 3 intensive supports for non-responders. This included practice as a general education teacher, a Tier 2 interventionist, and a special education teacher. Through these experiences, MTSS-PR participants gained a deep understanding of the critical features of an evidence-based school-wide system, as well as evidence-based classroom practices. It is likely that these teachers have a deeper understanding of tiered support systems than teachers who did not have this preparation. In the long run, these teachers will know how to coordinate student services across all three levels of support since they have experience supporting students at each tier. Lewis and Newman Thomas (2014) suggested that understanding the complementary relationship between evidence-based teacher practice and school-wide systems of support, as well as experiences providing various levels of support, are likely needed to produce effective teachers who can sustain positive student outcomes.

In addition to preparing preservice teachers, school districts may also use the MTSS-PR approach as an effective model for transitioning para-educators to teachers, career changers to teachers, or transitioning students from traditional teacher preparation into full-time teachers. Importantly, during their preparation, participants became highly invested in the children with which they worked and their school, working full time and attending all faculty meetings, grade-level team meetings, and trainings. In addition, the participating district valued having the students a full year before their full-time employment. In fact, at the conclusion of the MTSS-PR pilot the district requested more students, as the MTSS-PR participants became highly regarded teachers in their schools.

While the strategies of MTSS-PR were novel, they did not prove overly challenging or resource-intensive for the participants, schools, or the district. It was initially anticipated that finding schools implementing high-quality three-tiered instructional and behavioral supports would be a challenge. However, each year more states scale-up implementation of MTSS (e.g., California, Kansas, Florida, Michigan, Oregon, and Utah), so finding schools ready to take part is becoming increasingly easier (Freeman et al., 2009).

### ***Limitations***

Several potential limitations of this case study warrant discussion. First, the small number of participants in the case study ( $n = 3$ ) limits the representativeness of the results. Even though the three participants were within the normal range of university student performance when accepted into the MTSS-PR project, it is possible that they excelled for reasons other than their preparation in the project. Future research should increase the number of participating students, schools, and districts involved to gather a better understanding of the project's impact.

Second, the dependent measures implemented in this case study involved teacher performance, survey, and interview data. It did not include student performance on academic or behavioral measures other than on-task behavior. The end goal of novel approaches to teacher preparation should be the improvement of student outcomes, and this case study did not evaluate those outcomes. Instead, the current study provides preliminary evidence that an effective training program can improve teacher performance on evidence-based practices in their first year of teaching. Future research should include the evaluation of student academic and behavioral performance before and after implementation of the residency project.

Third, during this pilot project the project integrated much of the traditional teacher education coursework into the preparation program. Clearly, as both the university and school district gain more experience implementing and evaluating this program, much of the coursework can further be redesigned and streamlined while enhancing and individualizing residency experiences. This will result in teachers who early in their careers know how to adjust their instruction for a broad range of learners. This will also result in a residency program that prepares participants for every aspect of teaching while not making them feel overwhelmed by the time commitment.

### **Conclusion**

Results of past efforts to effectively and efficiently prepare teachers to work in high-need schools indicates a need for additional efforts that employ effective three-tier systems of academic and behavior support. By streamlining the undergraduate preservice curriculum, placing students full-time in schools throughout their teacher preparation experience, and preparing them in all three tiers of academic and behavior support, MTSS-PR presents a positive alternative to typical approaches to teacher preparation. Further research is needed to substantiate this study's findings. However the data provided here are encouraging. As universities and practitioners strive to address the research-to-practice gap, a critical element will be the utilization of preservice preparation programs like MTSS-PR, which infuses future teachers in evidence-based school models.

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