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HOPE: A Professional Development Model to Enhance Math Teacher Effectiveness

A. Significance (20 points)

The *HOPE: A Professional Development Model to Enhance Math Teacher Effectiveness* project aims to close mathematics achievement gaps for students in high needs middle schools in North Carolina by improving the instructional skills of grades 7-8 math teachers. We meet **Absolute Priority 1 – Demonstrates a Rationale** and **Absolute Priority 3 – Field-Initiated Innovations – Promoting Equity in Student Access to Educational Resources and Opportunities: Science, Technology, Engineering, and Mathematics (STEM)** using a project design founded upon evidence-based practices for teacher support that includes 1) effective teacher professional development (PD) with innovative components (e.g., model lessons during workshops and virtual coaching) aimed at improving student achievement for high-needs students and 2) PD for assistant principals (APs) and teacher leaders (TLs) on supporting teachers’ professional growth. This project also meets the criteria for **Competitive Preference Priority 2: Addressing the Impact of Covid-19 on Students, Educators, and Faculty** by improving teachers’ skills and instructional strategies that will enable them to accelerate student learning.

The North Carolina Department of Public Instruction (NCDPI), which is a partner in the HOPE PD project, specifically requested a focus on grades 7-8 math instruction based on their data from End of Grade (EOG) assessments. The significance of this project is highlighted by the possible impact on student learning in our partner districts, which have seen substantial achievement gaps for many years compared to more affluent districts in their state. School closures due to the Covid-19 pandemic exacerbated those gaps, causing students to fall even further behind their peers, as noted in Section B3 and Appendix J. Whereas the most recent (2023) data shows that 47% of North Carolina students are not proficient in math by state standards, initially identified partner districts (Stanly County Schools and Harnett County Schools) have even higher rates of non-proficiency (Stanly, 52.8%; Harnett, 60.3%). NCDPI also shared with SREB that “Math I [i.e., the math course taken by most ninth-graders in NC] remains a *gatekeeper* for many students” meaning that many students across the state struggle to pass Math I on their first attempt, which is similar to how Algebra 1 has been traditionally considered a *gatekeeper* for students in the U.S. **NCDPI has committed to assisting SREB in the recruitment of additional high-needs districts (as evidenced by their letter of support in Appendix C).**

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The impacts of the Covid-19 pandemic wiped out approximately four months of learning achievement in math across the country. An analysis of data from 3.3 million students who took the common math formative assessment in 2021 showed that only 13% of third graders – the cohort entering 7th grade in fall 2025 – were on grade level in math, as compared to 18% historically. Only 20% of 4th graders were on grade level, compared with 29% historically. Getting students back to where they need to be will require acceleration across the curriculum, at all grade levels, and teaching with acceleration in mind will require teachers to use strategies and skills they do not currently have (Satter et al., 2022). A recent CALDER analysis of pandemic learning loss (Callen et al., 2024) found that fully three-quarters of learning loss in math achievement could be attributed to differences in school effects. In other words, some schools did much better than others in insulating their students from learning loss, meaning that a strong community of practice and strong instructional leadership substantially mitigated pandemic learning losses – suggesting that this project’s focus on working with teams of teachers and actively involving school leaders is the correct approach (CPP2).

The project’s innovative design, built upon evidenced-based features of effective professional development (see the conceptual framework in Section B1), will make it easily replicable by other schools and districts within North Carolina and around the nation.

Multi-Layered Support for Teachers – HOPE PD Model: A Promising New Strategy

To improve student outcomes, finding and developing more effective models of professional learning that make teachers and their teaching practices more effective is essential. This project is designed to positively impact student achievement through improving **the professional learning of middle school math teachers. It is designed around a promising new strategy built upon the existing practices** of effective PD and other components of effective teacher support outlined in the conceptual framework in Section B1. At the core of this innovative teacher support is a workshop model incorporating model lessons/peer observations and professional learning communities (PLCs) tightly aligned with frequent virtual coaching through video observations. The **HOPE Model (Hear-Observe-Plan-Enact)** is a four-step PD process that begins in a workshop and ends with a teacher reflecting on their instruction (see Figure 1).

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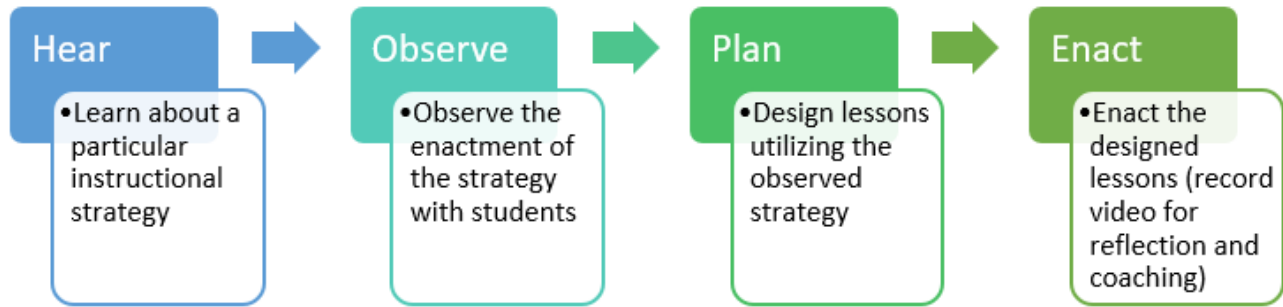


Figure 1. HOPE Professional Development Model

During quarterly workshops, grades 7-8 math teachers will attend a full day of PD with a small cohort (i.e., 10 teachers of the same grade level = 2 teachers each from 5 schools) that begins with 1.5 to 2 hours of professional learning centered around math strategies (*Hear*; see Section B1 for a description of these evidence-based strategies). The SREB trainer will then model a lesson in one of the participating teacher's classrooms with the students while the teachers observe the trainer putting into practice the high-quality instructional strategies they were just taught earlier that morning (*Observe*). After the observation, the teachers will continue the PD outside the classroom, reviewing the trainer's implementation of the strategy and considering how it engaged students in learning grade-level content. They will conclude the day's workshop by planning at least two lessons incorporating the targeted strategies (*Plan*) that they will then implement before the next workshop (*Enact*). They will choose one of the lessons to record (≥ 20 minutes) and upload the video to a secure online platform (e.g., Teaching Channel), watch the video, and make time-stamped reflective comments. SREB coaches will watch the video and use a standard protocol to debrief with the teachers via a video conferencing system (e.g., Zoom). In the summer before the quarterly workshops, teachers will attend a three-day workshop to learn about the HOPE Model and explore evidenced-based strategies for math pedagogy.

Between quarterly workshops, teachers will have access to grade-level content-specific virtual PD offered once a quarter (4 times per year; two options each month). Teachers can choose which synchronous online PD sessions they attend given their specific content knowledge needs. For example, one session might focus on the progression of state standards related to fractions, rates, ratios, and slope while the other session that quarter might focus on the progression of geometric concepts such as 2D figures that create the

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nets for 3D figures. When teachers are given a choice in PD, they find it to be more beneficial (Parsons et al., 2019). These sessions will be designed by SREB instructional coaches based on the needs of teachers as evidenced by pre-assessment surveys (i.e., T-STEM survey) and domain-specific results from North Carolina End-of-Grade assessments. By participating in these multiple types of PD, teachers will create districtwide PLCs.

The HOPE Model, which is the cornerstone of this project, is **an innovative design built upon evidence-based practices for professional learning**, specifically the work of Darling-Hammond et al. (2017). Darling-Hammond and her colleagues reviewed 35 methodologically rigorous studies that examined effective professional learning. They summarized the results into seven characteristics of effective PD. Table 1 displays how our project is aligned with these characteristics.

Table 1: Seven Features of Effective Professional Development

PD Features	Description	HOPE Model
Focused on content	Includes an intentional focus on discipline-specific curriculum development and pedagogies	Workshops and coaching for teachers will deepen their content-specific pedagogy in grades 7-8 math. Workshops and coaching for APs and TLs will build their capacity to support teachers' professional growth.
Incorporates active learning	Engages teachers directly in designing and trying out teaching strategies, and does not include lectures or activities not directly connected to teachers' classrooms and students	During workshops, teachers will experience an instructional strategy like a student, then observe the trainer working with their students on the strategy; teachers try the same strategy in the coming days, recording the lesson and getting feedback from a coach. APs and TLs will receive feedback during coaching visits on leading PLCs and debriefing with teachers after observations.
Supports collaboration	Includes space for teachers to share ideas and collaborate in their learning, often within job-embedded contexts	Workshops are designed for small groups of teachers (PLCs) to observe together and collaborate on future lessons, and for APs and TLs to collaborate on effective PLC structures within a school.
Uses models of effective practice	Provides teachers with a clear vision of what best practices look like, including lesson plans, sample student work, observations of peer teachers, and video or written cases of teaching	Content of the teacher workshops will focus on best practices outlined in the What Works Clearinghouse (WWC) practice guides for math problem solving and NCTM's Mathematics Teaching Practices. Content of AP/TL workshops will focus on best practices for instructional leadership, PLCs, and supporting teachers' professional growth. See below Section B1 and Appendix J for more.
Provides coaching and expert support	Includes sharing expertise about content and evidence-based best practices focused on teachers' individual needs	Teachers and APs have regular access to expert coaching.
Offers feedback and reflection	Encourages teachers to think about, receive input on, and make changes to their practice	Coaching for teachers includes virtual/video coaching that incorporates teacher reflection. Coaching for APs and TLs includes feedback and reflection time.

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	by facilitating reflection and soliciting feedback	
Is of sustained duration	Provides time and opportunity for teachers to learn, practice, implement, and reflect on new strategies that facilitate changes in their practice	Support covers a full year period. In-person teacher workshops will be every quarter. After-school sessions are once a quarter. Between workshops, teachers will try strategies learned, reflect on their practice, and receive feedback from expert coaches. They will also meet as PLCs to plan lessons and analyze student data.

The HOPE Model is not only built upon the existing strategies of effective PD, but it also incorporates other evidence-based strategies for teacher support including instructional coaching, virtual/video coaching, model lessons/peer observations, and teacher collaboration/PLCs, all of which are described in our conceptual framework (Section B1). **The *push-in* design of this professional learning model — where the trainer goes into a live classroom with students during the school day to demonstrate teaching practice — is a true innovation as little to no research has been conducted on this type of PD.**

Combining this type of PD design with 1) virtual/video coaching, 2) after-school teacher-chosen virtual PD, and 3) training and coaching for APs and TLs adds to the innovative aspect of the project, making this a groundbreaking design that could have lasting impacts on PD in our partner districts and beyond.

Multi-Layered Support for Assistant Principals and Teacher Leaders

Research indicates that instructional leadership and the types of feedback school administrators tend to give teachers are heavily influenced by the administrator’s teaching backgrounds, and subject matter subcultures strongly influence pedagogy. In other words, school administrators who did not teach math can struggle to provide meaningful support to the math teachers they supervise (Lochmiller, 2016). APs also report that they need help becoming more effective instructional leaders (Allen & Weaver, 2014). Our project attends to the needs of teachers and APs by providing support to APs and teacher leaders (TLs) through workshops and coaching that will build their capacity to support teachers’ professional growth. APs will attend the summer institute and quarterly teacher workshops, learning evidenced-based instructional strategies for math alongside their teachers. Each month, APs and TLs will attend virtual workshops (eight sessions per year, 1 hour/session) learning how best to support teachers’ professional growth. They will receive a full-day coaching visit each quarter from an SREB leadership coach who will collaborate with them on systemic supports for math teachers. One TL per school will also participate in

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the monthly virtual sessions with APs, learning strategies for leading their peers in PLCs (see Appendix J for more on workshop and coaching topics).

Timeline

Upon approval of this project, we will finalize recruitment of 2 high-needs middle schools in North Carolina (each with approximately two math teachers per grade level in grades 7-8) that agree to participate in a one-year pilot study (2025-26). These schools should already have in place processes and expectations for teacher collaboration in grades 7-8 math. The pilot study will provide us time to assess the usability and feasibility of each component of the HOPE Model and make adjustments as needed. During Spring 2026, we will finalize the recruitment of an additional 60 high-needs middle schools in North Carolina (each with approximately four grades 7-8 math teachers) that agree to participate in the impact study (2026-27, 2027-28). The impact study will be a blocked cluster randomized control trial. Our external evaluator will randomly assign 30 schools to the treatment group and 30 schools to the control group (with each group divided evenly into two cohorts). Thus, approximately 120 teachers will participate in the impact study as treatment-group teachers while approximately 120 teachers will participate as control-group teachers. Thirty treatment teachers (one per school) will serve as teacher leaders, chosen by their principals. One AP at each treatment school will also participate. Table 1 in Appendix J details the amount and frequency of PD for treatment teachers and APs during the impact study.

Significance of Math Instruction in Student Learning and Life Outcomes

Teachers, students, parents and policymakers all accept the idea that math skills contribute to employment, income, and career success (Bregant, 2016). There is good reason for them to do so. According to the U.S. Department of Labor, job openings in STEM careers are expected to grow at twice the rate of the rest of the workforce (by 11% between 2021 and 2031), and in 2021 median wages in STEM careers were at twice the level of wages in non-STEM careers (median wage of \$95,420, versus \$40,120 for non-STEM; Krutsch & Roderick, 2022). Math skills are among the most valued academic skills in the future workforce, and the learning losses connected with the pandemic are projected to have an enormous impact on future earnings. The economist Eric Hanushek has estimated that unless the learning losses are ameliorated and reversed, students in North Carolina will incur a 7% reduction in their total lifetime

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earnings due to the pandemic (Hanushek, 2022).

The HOPE program PD and coaching will focus on high-impact, evidence-based practices that are most likely to reverse learning losses and accelerate future learning, using practices the WWC has vetted (CPP2). A WWC practice guide for middle grades math instruction (Woodward et al, 2012, revised 2018) found **strong evidence** for assisting students in learning problem-solving processes but only minimal evidence for the effectiveness of teachers preparing problems in advance and working them in front of the class in whole-class instruction — a typical teaching practice of many American math teachers. The WWC team also found strong evidence for teaching students how to use visual representations, and moderate evidence for helping students recognize and articulate mathematical concepts.

Together, these findings point to the strong potential for improving student learning in mathematics by engaging teachers and school leaders in professional learning as we have designed it in the HOPE Model. Furthermore, the recent CALDER study (Callen, 2024) of pandemic learning loss highlights the role of school effects on math achievement. This in turn hints that improvements in math instruction will be most effective when implemented in a whole school, as a self-sustaining community of practice with the direct involvement of school administrators.

Through interviews during the proposal submission period, NCDPI and our district partners have expressed a strong desire to increase Math I readiness by improving teaching and learning in grades 7-8 math. As evidenced by the district data in Appendix J, student achievement in grades 7-8 math decreased after the Covid-19 pandemic. Though many schools have increased their scores, few have student proficiency levels equal to or greater than before the pandemic (CPP2). Even before the pandemic, too few students across our partner districts and all of North Carolina were proficient in math.

B. Quality of the Project Design (30 points)

B1. The extent to which there is a conceptual framework underlying the proposed research or demonstration activities and the quality of that framework.

The project aims to close mathematics achievement gaps for students in high-needs middle schools in North Carolina by improving the instructional skills of math teachers, the instructional leadership capacity of school administrators, and the amount and quality of teacher collaboration within grade-level math teams. This project is supported by a conceptual framework that underpins the quality of the project design

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and will lead to improved outcomes for students and teachers.

High-quality professional development: As mentioned in Section A, the HOPE Model is built upon the existing strategies of effective PD, particularly those described by Darling-Hammond et al. (2017). However, our design is also supported by many other researchers. In a randomized control trial, Meyers et al. (2015) found significant positive effects on student achievement in grades 7-8 math when teachers receive "intensive on-site professional development, and job-embedded coaching to enhance teachers' classroom practices." This study was deemed a **Tier 1 study (strong evidence) by the WWC**. Our project provides similar structures in PD and content focus so that teachers learn to apply practices essential to teaching diverse student populations, such as inquiry-based learning strategies.

Model lessons/peer observations: Daniels et al. (2013) found that teachers observing others teach can positively influence teacher attitude and practice. As participating teachers engaged in intentional reflection, they were more able to articulate areas of their instructional practices that would change as a result of the process. Vincent (2018) that found teachers perceived peer observations as an effective form of PD when they were provided adequate time for observations and follow-up work. In the HOPE Model, teachers will have adequate time to observe the trainer teach *their students* as each workshop will include at least 30 minutes of trainer-led instruction with students (i.e., peer observation). This process is also similar to that of a math studio, in which teachers observe another teacher conduct a lesson and then collaboratively debrief the lesson by examining student discourse, drawing conclusions about student learning based on the level and type of discourse, and then reflecting on how they might change their own instructional practices to deepen student learning (Lesseig, 2016).

Instructional coaching: In their 2020 study, Harbour and Saclarides analyzed a data set that included 2011 NAEP assessment scores for fourth-grade math that included approximately 191,000 students from 7,500 elementary schools. The data set noted whether each school employed a part-time (PT) or full-time (FT) math coach or specialist. Students in schools with FT math coaches/specialists were more likely to outperform their peers at schools with PT or no math coaches/specialists. This difference was statistically significant. In a review of 60 studies that utilized causal research designs, Kraft et al. (2018) also found that instructional coaching can have substantial effects on teacher practice and student achievement.

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Virtual/video coaching: Harvard's Center for Education Policy Research conducted a randomized control trial in 2013 focused on the impact of using videos for teacher observations rather than in-person observations (Kane et al., 2015). Teachers recorded themselves multiple times during the year and were asked to choose five videos to submit for feedback. Teachers reported being more self-critical and more likely to identify specific changes they made to their instructional practices. In his synthesis of 2,100 meta-analyses of education research, John Hattie (2023) found an effect size of 1.01 for the use of video to coach teachers on microteaching strategies.

Professional learning communities (PLCs)/teacher collaboration: Many researchers have shown a connection between teacher collaboration and teacher outcomes such as self-efficacy. Berry et al. (2009) conducted an extensive study, including surveys of 1,210 preK-12 teacher leaders and interviews with 29 Teachers Network participants, that connected teacher collaboration to teacher efficacy and retention. The majority of study participants worked in urban, high-needs schools. Berry and colleagues found that most teachers sought opportunities for collaboration with others and that teachers reported improved self-efficacy in collaborative school environments. They also found that colleagues' support was the only school culture element significantly related to teachers' planned long-term retention at their school (when they controlled for a various school factors). Other research supports Berry's et al. findings – Long et al. (2012) reported that novice teachers were more likely to stay in their schools when they described the school culture as highly collaborative.

Teacher collaboration, particularly through PLCs, has long been considered an effective teacher practice that can impact teacher self-efficacy (Berry et al., 2009; Lee et al., 2011; Long et al., 2012) and student outcomes. Akiba & Liang (2016) examined the effects of six types of teacher professional learning activities on student achievement growth over four years using statewide longitudinal survey data collected from 467 middle school mathematics teachers in 91 schools merged with 11,192 middle school students' mathematics scores in a standardized assessment in Missouri. The data showed that teacher-centered collaborative activities to learn about mathematics teaching and learning (i.e., teacher collaboration and informal communication) were more effective in improving student mathematics achievement than learning activities that did not necessarily involve such teacher-centered collaborative opportunities (e.g., traditional

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workshop PD, university courses).

See Table 2 for additional research that supports these key components of our project.

Table 2: Project Components and Corresponding Research

Project Component	Research
High-quality professional development	Brownell et al., 2019; Darling-Hammond et al., 2017; Hill & Papay, 2022; Kedzior & Fifield, 2004; Lynch et al., 2019; Meyers et al., 2015; Parkinson et al., 2015; Sancar et al., 2021; Saunders et al., 2021;
Model lessons/teacher peer observations	Burgess et al., 2021; Daniels et al., 2013; Hamilton, 2013; Hendry & Oliver, 2012; Lesseig, 2016; Paul, 2021; Vincent, 2018
Instructional coaching, including observations with feedback	Elfarargy et al., 2022; Harbour & Saclarides, 2020; Hill & Papay, 2022; Kane et al., 2012; Kraft et al., 2018; Nava et al., 2019; Redding & Hunter, 2018; Russell et al., 2020; Saunders et al., 2021
Virtual coaching	Briscoe, 2019; Clark et al., 2022; Hollingsworth & Clarke, 2017; Kane et al., 2015; Prilop et al., 2020; van der Linden et al., 2022
PLCs/teacher collaboration	Akiba & Liang, 2016; Darling-Hammond & Richardson, 2009; Elfarargy et al., 2022; Gargroetzi et al., 2021; Hill & Papay, 2022; Jacopovic et al., 2022 ; Lee et al., 2011

Through PD and coaching, grades 7-8 math teachers will deepen their understanding of content-specific pedagogy, including strategies outlined in the **WWC practice guide on Math Problem Solving** in grades 4-8, which are **supported by moderate or strong evidence** of positive impacts on students (as mentioned in Section A). The WWC practice guide for problem solving includes strategies such as exposing students to multiple ways to solve problems and including routine and non-routine problems in lessons (Woodward et al., 2012, 2018). Teachers will also expand their pedagogical knowledge by analyzing how the strategies in the practice guide support the teaching of the North Carolina Course of Study, specifically the Standards for Mathematical Practice. They will also analyze how the strategies learned during HOPE PD align with the evidenced-based Mathematics Teaching Practices described by the National Council of Teachers of Mathematics (NCTM) as “a framework for strengthening the teaching and learning of mathematics” (p. 9, NCTM, 2014; see Appendix J for a fuller description of the Mathematics Teaching Practices and supporting research). The Implementation Team will also use the results of the teacher pre-assessment (i.e., *T-STEM* survey described in section E1) and domain data from the NC end-of-grade assessments to determine pedagogy and math content needs of teachers for PD and coaching.

Assistant principals will also attend the Summer Institute and quarterly workshops, learning alongside their teachers. During the Summer Institute, APs and teacher leaders will attend breakout sessions that expand their skills to establish and lead professional learning communities (PLCs) of teachers, which is

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noted above as a key component of our conceptual framework.

B2. The extent to which the goals, objectives, and outcomes to be achieved by the proposed project are clearly specified and measurable.

The project’s goals, objectives and outcomes are clearly defined and measurable as noted in the logic model in Appendix G and Table 3 below.

Table 3. Goals, Objectives, and Performance Measures

CENTRAL GOAL: Increase math achievement for students in grades 7-8 in high-needs middle schools by improving teachers’ instructional practices and skills	
GOAL #1: Design, implement, and refine the HOPE Model of professional development with a pilot cohort.	
Objectives	Performance Measures
Obj. #1.1: Establish strong partnerships.	PM #1.1a: Partner organizations will meet at least once per quarter to discuss implementation successes and challenges.
Obj #1.2: Recruit 2 high-needs middle schools, each with ≥2 teachers per grade level in grades 7-8 math to serve in pilot study.	PM #1.2a: Schools in the pilot study serve students who are traditionally underserved (e.g., ≥45% or more of students receive free/reduced lunch, ≥30% of students are English language learners, ≥15% of students receive special education services, ≥50% of students are people of color).
Obj. #1.3 Provide high-quality professional learning to teachers and assistant principals in the pilot study.	PM #1.3a: At least 80% of teachers and assistant principals attend the Summer Institute and four quarterly workshops. PM #1.3b: At least 80% of teachers attend 2 virtual workshops each semester. PM #1.3c At least 80% of assistant principals and teacher leaders attend four virtual PLCs each semester. PM #1.3d: At least 80% of teachers and assistant principals report the professional learning opportunities were high quality.
Obj. #1.4: Provide high-quality instructional coaching to teachers in the pilot study through the use of video and virtual platforms.	PM #1.4a: At least 80% of teachers participate in four virtual coaching sessions. PM #1.4b: At least 80% of teachers report that self-reflecting helped them improve their teaching practices. PM #1.4c: At least 80% of teachers report that the coaching sessions improved their teaching practices. PM #1.4d: At least 80% of teachers report that the coaching sessions were high quality.
Obj. #1.5: Provide high-quality coaching to assistant principals and teacher leaders in the pilot study.	PM #1.5a: At least 80% of assistant principals and teacher leaders participate in four in-person coaching sessions. PM #1.5b: At least 80% of assistant principals and teacher leaders report that the coaching sessions improved their ability to support teachers’ professional growth. PM#1.5c: At least 80% of assistant principals and teacher leaders report that the coaching sessions were high quality.
Obj. #1.6: Use a continuous improvement cycle to collect and analyze data and make adjustments to the design of the HOPE Model.	PM#1.6a: Evaluators collect program development, usability, feasibility, implementation, and perception data from various sources during pilot study. PM#1.6b: Evaluators provide project team with ongoing feedback (based on data collected during usability and feasibility study) to inform improvements to the HOPE Model. PM #1.6c: Trainers report adjustments to workshops based upon workshop evaluation results, coaching reports, observation data, etc.

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	<p>PM #1.6d: Coaches report adjustments to coaching protocols based upon qualitative feedback.</p> <p>PM#1.6e: The project team (with support from evaluators) estimates cost per student served during the usability/feasibility study.</p>
GOAL #2: Implement the refined HOPE Model of professional learning with a two impact cohorts and test its promise of improving teacher and student outcomes (impact study).	
Objectives	Performance Measures
Obj. #2.1: Recruit 60 high-needs middle schools, each with ≥ 2 teachers per grade level in grades 7-8 math.	<p>PM #2.1a: At least 80% of schools in the impact study serve students who are traditionally underserved (e.g., $\geq 45\%$ or more of students receive free/reduced lunch, $\geq 30\%$ of students are English language learners, $\geq 15\%$ of students receive special education services, $\geq 50\%$ of students are people of color).</p> <p>PM #2.1b: Principals of eligible schools agree to participate in the two-year impact study, signing a memorandum of understanding.</p> <p>PM #2.1c: Four teachers per school in grades 7-8 math agree to participate in the impact study.</p> <p>PM #2.1d: Evaluators randomly assign 32 schools to the treatment group.</p>
Obj. #2.2 Provide high-quality professional learning to treatment teachers and assistant principals.	<p>PM #2.2a: At least 80% of teachers and assistant principals attend the Summer Institute and four quarterly workshops.</p> <p>PM #2.2b: At least 80% of teachers attend 2 virtual workshops each semester.</p> <p>PM #2.2c At least 80% of assistant principals and teacher leaders attend four virtual PLCs each semester.</p> <p>PM #2.2d: At least 80% of teachers and assistant principals report the professional learning opportunities were high quality.</p>
Obj. #2.3: Provide high-quality instructional coaching to treatment teachers through the use of video and virtual platforms.	<p>PM #2.3a: At least 80% of teachers participate in 4 virtual coaching sessions.</p> <p>PM #2.3b: At least 80% of teachers report that self-reflecting helped them improve their teaching practices.</p> <p>PM #2.3c: At least 80% of teachers report that the coaching sessions improved their teaching practices.</p> <p>PM #2.3d: At least 80% of assistant principals and teacher leaders report that teachers in their schools who participate in the HOPE Model of PD coaching demonstrate improved teaching practices.</p> <p>PM#2.3e: At least 80% of teachers report that the coaching sessions were high quality.</p>
Obj. #2.4: Provide high-quality coaching to assistant principals and teacher leaders in the impact study.	<p>PM #2.4a: At least 80% of assistant principals and teacher leaders participate in four in-person coaching sessions.</p> <p>PM #2.4b: At least 80% of assistant principals and teacher leaders report that the coaching sessions improved their knowledge about how to support teachers' professional and emotional wellbeing.</p> <p>PM#2.4c. At least 80% of assistant principals and teacher leaders report that the coaching sessions were high quality.</p>
Obj. #2.5: Collect and analyze implementation data and provide feedback to project team.	<p>PM #2.5a: Evaluators collect implementation and perception data from various sources, meet with project team at least once per quarter to provide feedback.</p> <p>PM #2.5b: The project team (with support from evaluators) estimates cost per student served during the impact study.</p>
Obj. #2.6: Assess the impact of implementation on <i>student math achievement</i> .	PM #2.6a: Evaluators collect and analyze North Carolina statewide math assessment data for grade 7-8 students at participating treatment and control schools as described in the evaluation plan.
Obj. #2.7: Assess the impact of implementation on <i>teacher self-efficacy and math instruction</i> .	PM #2.7a: Evaluators collect and analyze data from the T-STEM for treatment and control teachers as described in the evaluation plan.

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Obj. #2.8: Offer delayed support, including workshops and coaching, to the control teachers in each school.	PM #2.8a: Control teachers attend a three-day summer workshop in 2028. PM #2.8b: Control teachers participate in quarterly workshops in 2028-29 that are grade-level specific for one year. PM #2.8c: Control teachers participate in four coaching sessions using video and virtual platforms for one year.
GOAL #3: Disseminate findings about program design, implementation, promise at improving outcomes, and cost, to support continued testing or replication in other settings.	
Objectives	Performance Measures
Obj. #3.1: Develop a plan for sustainability and replicability of the HOPE Model.	PM #3.1a: Complete development of PD resources. PM #3.1b: Complete a cost analysis. PM #3.1c: Collaborate with partner district leaders to design a teacher support process that includes the components of the HOPE Model. PM #3.1d: Develop a plan to scale the HOPE Model to other schools in the state and region, with support from NCDPI.
Obj. #3.2: Disseminate the results of the project.	PM #3.2a: Partners disseminate the results of the impact study to district/state/national educational leaders and the local community through newsletters, social media, podcasts, and press releases. PM #3.2b: Partners disseminate the results of the impact study to state/national educational leaders through conference presentations and journal articles.

B3. The extent to which the design of the proposed project is appropriate to, and will successfully address, the needs of the target population or other identified needs.

As noted in the logic model (see Appendix G), our project design aims to improve student achievement in grades 7-8 math by increasing teachers’ professional expertise. This project’s innovative and multi-faceted components are designed to meet the needs of our target students, teachers, assistant principals, teacher leaders, and districts.

Needs of Target Students: Achievement gaps in grades 7-8 mathematics have long existed for students in high-needs schools in the U.S. The Covid-19 pandemic has increased those gaps, especially for our partner districts. In 2022, the National Assessment for Educational Progress (NAEP) for eighth-grade math had its largest decline nationally since the assessments were begun in 1990, decreasing the average score by eight points compared to the previous administration in 2019 (NAEP, 2022). A Harvard analysis found that, on average, North Carolina students lost 0.68 grade levels of learning in math and 0.46 grade levels of learning in reading due to the pandemic (Rash, 2024).

More information about the high-needs schools in our partner districts, including student demographics and student achievement for our partner districts are detailed Appendix J. For our project, we have defined high needs schools as those that serve high percentages of traditionally underserved students compared to national percentages ($\geq 45\%$ of students are classified as economically disadvantaged, $\geq 30\%$ of students are

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English language learners, $\geq 15\%$ of students receive special education services, and/or $\geq 50\%$ of students are people of color).

Stanly County Schools and Harnett County Schools, our first district partners, can be taken as representative of the high need districts and schools we intend to serve. The percentage of students proficient in math was lower in 2023 than it had been in 2019 in every one of the 10 of the middle schools in these two systems. Whereas in 2019 an average of 52.4% of students were proficient in math, in 2023 the average had fallen to 36.3%. The greatest decline was at Coats-Erwin Middle School in Harnett, where math proficiency fell from 61.2% to only 26.2%. Subgroup performance at these schools is also low. While overall proficiency in math was, as mentioned above, 36.3%, only 32.1% of Hispanic students were proficient; only 27.5% of economically disadvantaged students; and only 23.2% of Black students. Full details are provided in Appendix J.

Needs of Target Teachers: The HOPE Model of PD is designed to meet the professional learning needs of target teachers in a variety of innovative ways to ensure that all grade 7-8 math teachers in partner schools, whatever their baseline might be, are growing and improving in measurable ways. In-person and virtual workshops will deepen teachers' pedagogical knowledge specific to teaching grades 7-8 math. During in-person workshops, they will HEAR about an evidence-based strategy, OBSERVE the strategy being taught with *their students*, and PLAN lessons that imbed the strategy. After the workshop, they will ENACT the strategy and receive feedback from expert coaches. During virtual workshops, teachers will have the freedom and flexibility to choose between two sessions each quarter that address topics that deepen their pedagogical content knowledge, (e.g., how to teach mathematical concepts around the calculation of area, circumference, and volume of different shapes). Teachers also have a choice when deciding which lesson to record on video for four virtual coaching sessions.

To honor the teachers' time participating in this project, they will receive a stipend of \$1,200 for events outside of their normal contract hours/days. Teacher leaders will participate in additional training (i.e., virtual PLCs with APs) each month and earn an additional \$800 each year for a total of \$2,000. Assistant principals will also likely be off contract when the Summer Institute occurs. They will receive a stipend for those days along with the time spent on virtual PLCs each month, for a total stipend of \$1,400.

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Needs of Partner Schools/Districts: By providing multi-faceted support to teachers that includes after-school virtual workshops, this project decreases the needs for schools and districts to hire substitute teachers compared with traditional support that includes the same amount of PD time for teachers that is all in person. The HOPE Model also provides in-person workshops to small cohorts of teachers at one time (i.e., 10 teachers), which decreases the number of substitute teachers needed in a given day. With districts struggling to find substitute teachers in recent years, especially since the pandemic, our partner districts appreciate this aspect of the grant (see letters of support in Appendix C).

Our project also seeks to build capacity within the district since both APs and teacher leaders will receive training and coaching geared toward accelerating math instruction to recover learning lost during the pandemic (CPP2; Newton, 2023). One of the practices that has been identified as effective is offering double-dose math classes (Morton & Hashim, 2023). That particular solution requires that teachers have PD tailored to the strategy (knowing what to do with the extra time is as important as having the extra time) and the buy-in of school leadership – another reason the HOPE model of involving APs is promising.

C. Quality of Project Personnel (10 points)

The Southern Regional Education Board (SREB) is a nonprofit, nonpartisan organization led by a board that includes governors and their appointees (legislators, educators, and other leaders) from Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, **North Carolina**, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. With 132 employees in 18 states, SREB has sufficient financial and human resources to deliver the services described herein. SREB has a demonstrated record of raising student academic achievement and effectively providing PD for teachers, principals, and other school leaders. In particular, SREB has extensive experience in providing high-quality PD for middle grades teachers that focuses on practices linked to the improvement of student achievement, as well as coaching, planning and supporting the districtwide implementation of new instructional practices and PLCs.

SREB is committed to providing all employees a safe, supportive, and inclusive environment. With a diverse staff of 132 people who live all over the country, our employees have varied cultural backgrounds and experience in the education sector. Since our founding in 1948, we have maintained a focus on

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improving economic outcomes for all peoples in the Southeast through improving education and thus, **providing equitable opportunities for each student in our region is a core driver for our work.** Our president, ██████████, stated recently, “Our belief in the power of education to change lives and build the foundation for a more equitable society is unshaken. SREB exists because education holds the promise of eliminating the entrenched poverty and inequity that was – and is – the legacy of slavery. Our vision guides us: Each child and adult in the SREB region will have high-quality educational opportunities that build on the rich diversity of the region and lead to productive, meaningful lives and robust economies.” We take a very strategic/deliberate approach to our recruiting and employ a process that is inclusive and inviting. We are committed to a diverse workforce and expect our new hires/employees to be as well. To ensure the fidelity and integrity of our recruiting process, we take a variety of steps to ensure we attract and provide fair consideration to all, including underrepresented populations. This process includes promoting job openings on a variety of platforms including Diversity.com.

The key personnel assigned to this project are a diverse group and collectively have over 160 years in K-12 education. Table 4 details these personnel, their backgrounds, roles and responsibilities, and time commitment to this project. Five SREB staff members (i.e., PI, Project Director, Project Manager, State Lead, and Lead Trainer) will serve on the project Leadership Team, meeting once a month to monitor successful implementation. The Implementation Team (i.e., Project Manager, SREB trainers and coaches) will meet once a month to plan upcoming activities, share successes and troubleshoot any challenges. The Advisory Board will meet once a quarter to provide project oversight. This board will include the external evaluator, one leader from NCDPI, and one district leader from each of our partner districts will also serve on the Leadership Team. The Project Team includes all personnel from SREB and its partners participating in this project.

Table 4: Key SREB Personnel

Key Personnel	Background and Responsibilities
██████████, Principal Investigator (PI; 5%)	██████████ took office as the sixth president of SREB in July 2018. During his career, ██████████ has amassed education policy, assessment and instructional background at the local, state and national levels. Before coming to SREB, ██████████ was Kentucky’s state commissioner of education. At the national level, he worked closely with state agencies and educators around the country to improve policy and practice in science education. In Georgia, ██████████ served as science and mathematics program manager, director of academic standards, associate state superintendent for assessment and accountability and chief of staff for the

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	Georgia Department of Education. For this project, [REDACTED] will serve as the chair of the Leadership Team.
[REDACTED], Project Director (Co-PI; 15%)	[REDACTED] is the Division Director of Development & Innovation. She leads a team of researchers and coaches who provide support to teachers, local instructional coaches and school and district leaders on school improvement processes. She currently serves as the project director/manager for several federal grants: a \$5.6 million Teacher Quality Partnership grant (TQP, 2019), a \$4.6 million Supporting Effective Educator Development grant (SEED, 2022), and a \$1.9 million Institute of Education Sciences grant (IES, 2021). For this project, [REDACTED] will oversee all project activities, coordinate all invoices, MOUs and hiring. She is highly qualified to direct this effort.
To Be Hired, Project Manager (Co-PI; 100%)	S/he will secure space for PD activities, support SREB coaches with delivery of workshops, supervise coaching cycles, collect artifacts documenting fidelity of implementation, and coordinate data collection efforts. S/he will maintain weekly contact with the Project Director and will convene monthly meetings with the project Implementation Team and quarterly meetings with the project Leadership Team. (See Appendix J for full job description.)
[REDACTED] Project Coordinator (10%)	[REDACTED] is a Project Coordinator in the Office of School Improvement. She will support the project director and project manager by collecting and organizing project documentation regarding implementation and progress of goals and objectives, invoicing, processing travel and budget paperwork, personnel records, etc.
[REDACTED], State Lead (5%)	[REDACTED] is the Director of State and District Partnerships, serving educators in multiple states including North Carolina. He joined SREB in 2012, bringing many years of experience in the work world, the military and the field of education. Prior to coming to SREB, he spent time in Kentucky and Tennessee as an academic, CTE and special education teacher as well as 10 years as a principal. For this project, [REDACTED] will assist with recruitment and serve on the Leadership Team.
SREB Trainers (2 @ 20/20/25/35/25)	[REDACTED] is the Director for Curriculum and Instruction. He leads a team of program directors and instructional coaches as they develop and deliver high quality PD and coaching to teachers, coaches, and school/district leaders. Prior to joining SREB in 2011, he was the K-12 mathematics instructional specialist in Gaston County, NC. For this project, [REDACTED] will serve as the lead trainer. He will also serve on the Leadership Team. [REDACTED] is a senior leadership coach. She provides PD and coaching to school/district teams across the country. She will serve as a trainer for this project.
Instructional Coaches (3 @ 25/25/45/65/45)	Three SREB coaches – TBD – will provide content- and grade-specific feedback to participating teachers during the pilot and impact studies. Feedback will center around evidence-based instructional strategies and the North Carolina math standards. SREB’s math coaches have extensive experience coaching middle grades math teachers.
Leadership Coach (2 @ 20/20/45/75/45)	Two SREB leadership coaches will provide training and coaching to assistant principals and teacher leaders on how to support teachers’ professional growth and establish effective PLCs.

SREB has partnered with multiple organizations to develop this proposal. Table 5 lists partner organizations and their personnel who are critical to implementation. See Appendix C for letters of support.

Table 5. Partner Organizations

Organization/ Personnel	Background and Responsibilities
[REDACTED], American Institutes for Research	[REDACTED] is a managing director at AIR and has extensive expertise in math teaching and learning, instructional design, continuous improvement methods, evaluation, and research. She is currently the principal investigator (PI) on two projects to conduct simultaneous evaluations of math interventions funded through the Bill and Melinda

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(AIR; external evaluator)	Gates Foundation’s Balance the Equation Grand Challenge and the Advanced Education Research and Development Fund’s EF+Math program to improve math outcomes for students who are Black, Latinx, affected by poverty, and designated English learners. ■■■ ■■■ focused on a student-centered, personalized instructional model in math and PI for an Institute of Education Sciences project to adapt, evaluate and prepare to scale evidence-based math interventions. In addition, ■■■ currently directs a networked improvement community in which high school math teachers iteratively develop and refine instructional routines aimed at improving math outcomes for low-performing students. For this project, ■■■ will serve as the lead researcher/evaluator. Appendix J includes a more extensive biography of ■■■ and additional AIR staff involved in this project.
Stanly County	The superintendent will select a primary point of contact upon grant award who will serve on the Advisory Board.
Harnett County	The superintendent will select a primary point of contact upon grant award who will serve on the Advisory Board.
North Carolina Department of Public Instruction (NCDPI)	■■■ currently serves as the Section Chief for Math, Science and STEM with NCDPI. ■■■ is in his 27th year as an educator in NC. During that time, he has been a Kindergarten instructional assistant, high school social studies teacher, elementary and middle school assistant principal in Wake County as well as a principal and director in Chatham County. Prior to coming to NCDPI ■■■ served as the Chief Academic Officer for Pender County for 4 years. ■■■ will serve on the project’s Advisory Board.

D. Quality of the Management Plan (10 points)

The management plan is adequate to achieve objectives on time and within budget. Table 6 shows important project tasks and key milestones (boldface type), timelines and personnel assigned to accomplish the tasks. Milestones under Goal 1 pertain to the pilot study and refinement of project components. Milestones under Goal 2 pertain to the impact study. Throughout the grant period, project partners will engage in a continuous improvement cycle based on Deming’s *Plan, Do, Study, Act* (Bryk et al, 2015; see Appendix J for more detail).

Table 6: Management Plan

CENTRAL GOAL: Increase math achievement for students in grades 7-8 in high-needs middle schools by improving teachers’ instructional practices and skills		
GOAL #1: Design, implement, and refine the HOPE Model of professional development with a pilot cohort.		
Obj. #1.1: Establish strong partnerships.		
Obj #1.2: Recruit 2 high-needs middle schools, each with at least two teachers per grade level in grades 7-8 math to serve in pilot study.		
Obj. #1.3 Provide high-quality professional learning to teachers and assistant principals in the pilot study.		
Obj. #1.4: Provide high-quality instructional coaching to teachers in the pilot study through the use of video and virtual platforms.		
Obj. #1.5: Provide high-quality coaching to assistant principals and teacher leaders in the pilot study.		
Obj. #1.6: Use a continuous improvement cycle to collect and analyze data and make adjustments to the design of the HOPE Model.		
Activity–Key Milestones in Bold <i>Frequency in Italics.</i>	Timeframe	Responsibility

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* = “Repeat for each cohort.” [Objective(s)]		
Inform all partners about the status of grant award via telephone/email and reconfirm their commitment to participate [#1.1, #1.2]	1/25	Project Director Project Manager
Convene the project’s Leadership Team to review the Management Plan and initiate project activities for Yr. 1; establish quarterly meeting schedule [#1.1]	1/25	Project Director Project Manager
Administer <i>PRISM</i> survey to Leadership Team [#1.1]	January each yr	Project Director
Convene monthly meetings of the project’s Leadership Team [#1]	Ongoing 1/25 – 12/28	PI, Project Director
Convene monthly meetings of the project’s Implementation Team to review progress, plan next steps of implementation, solve problems, and identify needed refinements to the HOPE Model [#1]	Ongoing 1/25 – 6/29	Project Manager
Convene quarterly meetings of the Advisory Board [#1]	Ongoing 1/25 – 6/29	Project Director Project Manager
Meet in-person with partner district leaders to clarify project activities and expectations; review process for recruiting 60 middle schools in two cohorts; review process for selecting pilot schools vs. impact study schools [#1.1]	2/25	Project Director Project Manager
Work with partner district leaders to identify and recruit 2 middle schools to serve in the pilot study [#1.2]	1/25 – 2/25	District Contacts Project Manager
Identify and confirm the selection of 2 high-needs middle schools to participate in the pilot study; obtain a signed agreement from each school principal [#1.2]	3/25	Project Manager District Contacts School Principals
Select 2 math teachers at each grade level 7-8, an AP, and 1 teacher leader at each school for the pilot study [#1.2]	3/25	School Principals
Conduct virtual meetings with teachers, assistant principals at 2 pilot study schools to review project activities, expectations, and timelines for their participation; obtain signed consent forms [#1.2]	4/25	Project Manager District Contact SREB State Lead
Plan and convene an orientation session for the SREB trainers, SREB coaches to familiarize them with the project design and their responsibilities [#1.3, #1.4, #1.5]	1/25	Project Manager
Develop materials for summer institute for teachers and APs [#1.3]	2/25-7/25	SREB Trainers
Develop materials for quarterly in-person workshops for teachers and APs [#1.3]	2/25-4/26	SREB Trainers Leadership Coach
Develop content and materials for 8 monthly 1-hour virtual workshops for APs/teacher leaders in pilot schools, focusing on how to support teachers’ professional growth [#1.3]	2/25-4/26	Implementation Team
Conduct monthly virtual planning sessions to develop/refine 8 virtual PD sessions [#1.3]	3/25-9/25	Project Manager SREB Coaches
Develop instruments and protocols (i.e., surveys, focus group protocols, document and progress trackers, and other tools, as needed) for the pilot study [#1.6]	3/25 – 6/25	Evaluation Partner
Provide 3-day Summer Institute for teachers and APs, including breakout sessions for APs and teacher leaders on establishing and leading PLCs [#1.3]	7/25	Implementation Team
Provide quarterly 1-day in-person grade-level workshops centering around evidence-based math instructional strategies for small cohorts of pilot teachers, APs, and teacher leaders [#1.3]	Quarterly Fall 2025 Spring 2026	Implementation Team
Provide pilot teacher leaders and APs 8 monthly 1-hour virtual workshops focusing on how to support teachers’ professional growth and how to establish effective PLCs [#1.3, #1.4]	Fall 2025 – Spring 2026	Leadership Coach
Lead pilot teachers in monthly PLC sessions [#1.3, #1.4]	2025-26	Teacher Leaders

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Host 8 virtual PD sessions for teachers (2 hours each; 4/semester; teachers choose 4 sessions to participate in) [#1.3]	2025-26	WTCC Math Instructor
Provide pilot site teachers 4 virtual/video coaching sessions, including self-reflection and expert feedback on recorded lessons utilizing math instructional strategies observed during quarterly workshops [#1.4]	2025-26	Instructional Coaches
Provide 4 full-day coaching visits to APs and TLs on how to provide consistent and effective support for math teachers [#1.5]	Quarterly 2025-26	Leadership Coach
Activate the continuous improvement cycle – collect/use qualitative/quantitative data as described in Section E to identify and make needed adjustments to the HOPE Model [#1.6]	Ongoing throughout grant period	Implementation Team Evaluation Partner
Collect/analyze program records pertaining to program development, implementation, and teachers’ perceptions; share findings and data-based recommendations with SREB Team [#1.6]	Ongoing	Evaluation Partner
Use feedback and findings from pilot study to make ongoing improvements to project components before the impact study [#1.6]	Ongoing 2025-26	Implementation Team
Conduct focus groups with the SREB Team to gather information about program development, implementation, and how the team is using ongoing feedback to refine the program; analyze the data and develop informal data report to share findings and data-based recommendations with project team [#1.6]	Fall 2025 & Spring 2026	Evaluation Partner
Finalize Implementation Fidelity Index (which will include measurable thresholds for acceptable implementation as outlined in Section E) to document the content, quantity, mode, and quality of implementation during the usability/feasibility and impact studies [#1.6]	3/25 – 6/25	Evaluation Partner
Administer online teacher surveys to collect implementation data and gauge teacher’s perceptions of the program; analyze the data and develop informal data report; share findings and data-based recommendations with SREB Team [#1.6]	Fall 2025 Spring 2026	Evaluation Partner
Administer online AP/teacher leader surveys; analyze the data and develop informal data report; share findings and data-based recommendations with SREB Team [#1.6]	Fall 2025 Spring 2026	Evaluation Partner
Process stipends for teachers, teacher leaders, and assistant principals participating in pilot study [#1.3, #1.4, #1.5]	6/26	Project Manager Project Coordinator
Complete refinements to HOPE Model based on evaluation data, project team observations, and program records [#1.6]	6/26–8/26	Implementation Team
GOAL #2: Implement the refined HOPE Model of professional development with two impact cohorts and test its promise of improving teacher and student outcomes (impact study).		
Obj. #2.1: Recruit 60 high-needs middle schools, with an average of at least four grades 7-8 math teachers per school.		
Obj. #2.2 Provide high-quality professional learning to treatment teachers and assistant principals.		
Obj. #2.3: Provide high-quality instructional coaching to treatment teachers through the use of video and virtual platforms.		
Obj. #2.4: Provide high-quality coaching to assistant principals and teacher leaders in the impact study.		
Obj. #2.5: Collect and analyze implementation data and provide feedback to project team.		
Obj. #2.6: Assess the impact of implementation on <i>student math achievement</i> .		
Obj. #2.7: Assess the impact of implementation on <i>teacher self-efficacy and math instruction</i> .		
Obj. #2.8: Offer delayed support, including workshops and coaching, to the teachers in each control school.		
Activity–Key Milestones in Bold <i>Frequency in Italics.</i> * = “Repeat for each cohort.” [Objective(s)]	Timeframe	Responsibility
Meet with district leaders to clarify impact study expectations, activities, and timelines; review process for reconfirming schools’	12/25	Project Director Project Manager

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commitment to participate and recruiting schools to replace any dropouts since initial recruitment [#2.1]		District Contact
Finalize recruitment of 60 eligible schools to participate in impact study and confirm commitment to participate via principals' signed agreements [#2.1]	2/26	District Contacts Project Manager
Prepare and disseminate updated information about the HOPE project and the 2-year impact study to principals, APs, teachers of 60 participating middle schools in partner districts [#2.1]	3/26	Project Manager District Contacts Project Coordinator
Confirm assistant principals', grades 7-8 math teachers' and teacher leaders' agreement to participate in the impact study via signed informed consent forms [#2.1]	3/26	Project Manager District Contacts Project Coordinator
Conduct random assignment of 60 schools to treatment/control groups (30 treatment; 30 control) and to cohorts (15/15 in Cohort 1, 15/15 in Cohort 2) and inform schools of their placement via written communication [#2.1]	4/26	Evaluation Partner Project Manager
Finalize logistics for 3-day Summer Institute	4/26	Proj. Man. & Coord. District Contact
Finalize PD resources for the 3-day Summer Institute for teachers, APs in treatment schools [#2.2]	2/26 – 5/26	Implementation Team
Revise instruments and protocols (i.e., surveys, focus group protocols, document and progress trackers, and other tools, as needed) for the impact study, if needed [#2.5]	3/26 – 6/26	Evaluation Partner
Conduct 3-day in-person Summer Institute for treatment group teachers and APs [#2.2]	7/26 & 7/27	Implementation Team
Provide quarterly 1-day in-person grade-level workshops centering around evidence-based math instructional strategies for small cohorts of treatment group teachers and APs [#2.2]	Quarterly 2026-27 & 2027-28	Implementation Team
Provide treatment teachers 8 synchronous 2-hour grade-level, content-specific, virtual workshop sessions each year (teachers choose 2 each semester, based on perceived needs) [#2.2]	2026-27 2027-28	WTCC Math Instructor Math Consultant
Provide treatment teachers 2 virtual/video coaching sessions each semester, including self-reflection and expert feedback on instructional strategies observed during quarterly workshop [#2.3]	2026-27 2027-28	Instructional Coaches
Provide treatment teachers 8 monthly PLC sessions each year [#2.2, #2.3]	2026-27 2027-28	Teacher Leaders
Provide 8 monthly 1-hour virtual workshops each year for treatments APs and teacher leaders focusing on how to support teachers' professional growth and establish effective PLCs [#2.4]	Monthly 2026-27 2027-28	Leadership Coach
Provide 4 full-day coaching visits each year to treatment APs and teacher leaders on how to provide systematic support for math teachers [#2.3]	Quarterly 2026-27 2027-28	Leadership Coach
Conduct focus groups with the SREB Team to gather information about program development, implementation, and how the team is using ongoing feedback to refine the program; analyze the data and develop informal data report to share findings with SREB Team [#2.5]	Fall 2026 spring 2027 Fall 2027 Spring 2028	Evaluation Partner
Complete the Implementation Fidelity Index to document content, quality, mode, and quality of implementation during the impact study; share implementation findings with SREB Team [#2.5]	Ongoing summer 2026-spring 28	Evaluation Partner
Collect and analyze student-level scores on North Carolina math assessments for grades 7-8 students at beginning and end of each school year in both treatment and control condition; analyze data;	9/26 & 5/27 9/27 & 5/28	Evaluation Partner

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develop informal data report to share finding with SREB Team [#2.6]		
Administer online surveys (T-STEM) to grades 7-8 math teachers in both treatment and control conditions; analyze data; develop informal report to share findings with Project Team [#2.7]	Early fall 26/27 Late spring 27/28	Evaluation Partner
Process stipends for teachers, teacher leaders, and assistant principals participating in treatment [#2.3, #2.4, #2.5]	6/27 & 6/28	Project Manager Project Coordinator
Conduct the impact study’s impact analyses, mediation analyses, exploratory analyses, sensitivity analyses, implementation analyses	Summer 2028 – Winter 2029	Evaluation Partner
Prepare and submit Annual Performance Report	Oct/Nov 2025, 2026, 2027, 2028, 2029	Project Dir. & Man. Evaluation Partner
Prepare and submit Final Project Report including implementation data and data from assessments of the impact of implementation on student math achievement and teacher sense of efficacy [#2.5-2.7]	Per USED Timeline	Project Director Project Manager Evaluation Partner
Offer control teachers a 3-day Summer Institute [#2.8]	Summer 2028	Implementation Team
Offer control teachers quarterly workshops that are content and grade-level specific [#2.8]	2028-29	Implementation Team
Offer control teachers four coaching sessions using video and virtual platforms [#2.8]	2028-29	Implementation Team
Offer control APs and teacher leaders 8 virtual monthly workshops focused on how to support teachers’ professional and emotional wellbeing [#2.8]	2028-29	Leadership Coach
Conduct quarterly coaching visits for control APs & TLs [#2.8]	Quarterly 2028-29	Leadership Coach
GOAL #3: Disseminate findings about program design, implementation, promise at improving outcomes, and cost, to support continued testing or replication in other settings.		
Obj. #3.1: Develop a plan for sustainability and replicability of the HOPE Model.		
Obj. #3.2: Disseminate the results of the project.		
Activity–Key Milestones in Bold <i>Frequency in Italics.</i> * = “Repeat for each cohort.” [Objective(s)]	Timeframe	Responsibility
Convene the project’s Leadership Team to finalize a plan for sustainability within the partner district and replicability of the HOPE Model in other districts [#3.1]	8/28	Project Director
Complete a cost effectiveness analysis, including average cost per participant [#3.1]	Ongoing, with final analyses conducted 6/28–3/29	Proj. Dir., Proj. Man., Evaluation Partner
Collaborate to identify and connect with potential replication sites within SREB member states and to make adoption of the HOPE Model a regular part of services SREB provides to districts [#3.1, #3.2]	Ongoing Beginning Spring 2028	Project Director SREB State Leads
Make presentations about the HOPE project at state, regional, national meetings to create awareness and encourage replication [#3.1, #3.2]	Ongoing Begin. Fall 2026	Project Man., SREB Trainers & Coaches
Work with NCDPI’s Section Chief for Math/Science/STEM to disseminate information to districts and IHE leaders and encourage adoption of the HOPE Model [#3.1, #3.2]	Ongoing Beginning Summer 2028	Project Director Project Manager
Host a free virtual webinar about the HOPE Model that is open to registrants nationwide [#3.1, #3.2]	Fall 2028	Project Director Project Manager
Provide electronic copy of all descriptive materials, nonproprietary training protocols and reports resulting from the HOPE project at no cost to requesting districts and other education entities [#3.1, #3.2]	Ongoing Beginning Fall 2028	Project Coordinator
Share information about the HOPE project at annual SREB Board meetings attended by high-level education leaders and policymakers from SREB’s 16 member states [#3.1, #3.2]	6/25 – 6/28	Project Director
Post information about the HOPE project on the SREB website [#3.2]	Ongoing 1/25-12/28	Project Manager

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Present sessions about HOPE Model at the annual SREB Making Schools Work Conference attended by 3,000+ educators [#3.2]	Summer 2026, 2027, 2028, 2029	Project Manager SREB Coaches
Present a session about the HOPE Model at the annual SREB Coaching for Change Conference which draws a national audience [#3.1, #3.2]	Spring 2026, 2027, 2028, 2029	SREB Coaches
Prepare and submit an article about the implementation and impact of the HOPE Model to a peer-reviewed journal [#3.1, #3.2]	Fall 2028	Project Manager Evaluation Team

E. Quality of the Project Evaluation (30 points)

E1. The extent to which the methods of evaluation will, if well implemented, produce evidence about the project’s effectiveness that would meet WWC standards with/without reservations.

AIR will conduct an independent evaluation of the impact and implementation of the one-year HOPE PD program in grades 7-8 in North Carolina. Table 7 shows the research questions (RQs) and associated data sources for the evaluation. RQs 1-4 address the impact of the PD program on teacher and student outcomes. RQs 5-8 address implementation of HOPE PD. Findings from these implementation research questions will help interpret impact findings and inform continuous improvement of the program.

Table 7. Evaluation Research Questions, Data Sources, and Sample

Research Question	Primary Data Source(s)
Impact	
1. What is the impact of HOPE PD on teachers’ self-efficacy and instruction related to high-quality math instructional practices?	Study-administered teacher survey
2. What is the impact of HOPE PD on student math achievement?	Student demographics and math state test scores collected from participating districts
3. To what extent does the impact of HOPE PD differ across school contexts, teacher characteristics, and student characteristics?	All data for RQs 1-2
4. To what extent is the impact of HOPE PD on student math achievement mediated by teachers’ self-efficacy and math instruction?	All data for RQs 1–2
Implementation	
5. To what extent is HOPE PD implemented with fidelity?	Program data, coach logs, teacher leader logs
6. What are teachers’ and assistant principals’ perspectives of HOPE PD?	Teacher and assistant principal feedback forms, focus groups and surveys
7. What factors hinder or facilitate implementation of HOPE PD?	Teacher and assistant principal feedback forms, focus groups and surveys
8. To what extent does Assistant Principal and teacher experience in HOPE PD differ from business-as-usual professional support?	Teacher and assistant principal surveys

The evaluation will include three successive cohorts of schools. The first cohort will be a pilot study cohort that includes grades 7-8 math teachers in two schools during the 2025–26 school year. The pilot cohort will provide initial implementation data to address RQs 5-7 and to inform program refinement. The second and third cohorts will be used for the impact analysis (RQs 1-4) and to study implementation of

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HOPE PD (RQs 5-8) for one year during the 2026–27 and 2027–28 school years, respectively. **The evaluation is designed to meet WWC standards without reservations.** Findings from the evaluation will address project goals 1 and 2 by providing information about implementation and impact of HOPE PD.

E1. Methods to Generate Evidence That Meets WWC Standards Without Reservations

The impact study of HOPE PD will be based on a blocked cluster randomized control trial, with schools randomly assigned within districts. The impact study sample will consist of two cohorts of students and teachers in a total of 60 schools across 6 districts, with an estimate of 400 students and 4 math teachers per school, for a total of 24,000 students and 240 teachers in total. All schools participating in the evaluation will serve students who are traditionally underserved.¹

AIR will randomly assign schools to the treatment or control condition in the summer of 2026 for the first impact cohort of 30 schools and in summer 2027 for the second cohort of 30 schools. For both cohorts, we will randomly assign half the schools to receive HOPE PD (treatment) during the following school year (i.e., 2026–27 for the first impact cohort, 2027–28 for the second impact cohort) and the other half to continue with business as usual (control), participating in the existing PD offered by their district. Control schools will receive delayed treatment during the year after they participate in the study (2027–28 and 2028–29 for the two cohorts, respectively). Participating schools will be blocked by student demographic characteristics within school districts before randomization. We will assess baseline equivalence after randomization to ensure that the treatment and control groups are equivalent on observable student and school characteristics, such as gender, race/ethnicity, the schools' student composition, school locale (i.e., city, suburb, town, rural), and student- and school-level baseline math achievement.

For this evaluation, schools are the appropriate unit of assignment given the nature of the HOPE PD program. Specifically, the program involves teachers within the same school working together to plan lessons and participate in school-based PLCs led by a teacher leader, who is a teacher in the school and a participant in the HOPE PD program. In addition, the program includes training and support for the teacher leaders and APs in the school to learn about and provide feedback to teachers on their use of high-quality

¹ Schools that serve students who are traditionally underserved meet the following criteria: at least 45 percent of students are eligible for free- or reduced-price lunch, at least 30 percent of students are English language learners, at least 15 percent of students receive special education services, and/or at least 50 percent of students are people of color.

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instructional practices. A school-level randomized design will enable us to investigate the program, with its associated activities. There are three main threats to internal validity for this design: treatment spillover, joiners, and potential selection bias resulting from sample attrition, and we address each in turn.

Preventing Treatment Spillover. School-level random assignment will produce a study with strong internal validity and is associated with low risk of contamination or “spillover” effects because teachers are less likely to collaborate or share materials across than within schools. Because the one-year intervention is assigned at the school level and the study team will be able to control who receives HOPE PD, we do not expect spillover across groups. The likelihood of teachers sharing learning or materials from HOPE PD across schools is minimal.

Accounting for Joiners. Consistent with WWC (2022) standards, we will exclude from analyses teachers who transfer into schools assigned to the treatment condition after random assignment, but we will include students who do so. We will include these late student joiners because they present low potential for bias (WWC, 2022). AIR will establish participant teacher lists and collect classroom rosters to identify the students that each participating teacher instructs prior to random assignment to define the intent-to-treat (ITT) samples and track their status throughout the study. Further, to minimize the risk that joiners will bias impact estimates, random assignment results will not be shared with students, families, and teachers until after school begins in fall 2026 for the first impact cohort and fall 2027 for the second impact cohort.

Mitigating Sample Attrition. We will use multiple strategies to minimize attrition. First, the HOPE PD program is implemented in one, rather than multiple, years, which reduces the chance that we will lose participants over time. Second, we will conduct random assignment as close to the start of the school year as possible to establish the ITT sample with relatively stable teacher and student rosters. Third, to further minimize the risk of teacher-level and school-level attrition, we will keep in close contact with treatment and control schools to address any issues that might arise, and we will offer teachers and APs incentives for data collection to encourage their continued participation. Fourth, control schools are offered the treatment in the year following their participation in the study, which provides incentive to continue participation. Finally, to minimize student-level attrition, we will rely exclusively on secondary data such as test scores and will obtain student administrative records from participating districts.

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We will conduct school- and student-level attrition analyses after follow-up data collection at the end of the treatment year for each cohort and determine the level of overall attrition and differential attrition between the treatment and control groups. If there is no differential attrition, more than 50% of schools can drop out of the sample without causing the study to fail to meet WWC standards, even under the conservative attrition boundary; if treatment schools are 8 percentage points more likely (or less likely) to drop out of the sample than control schools, 30% of schools can drop out without causing the study to fail to meet WWC standards, assuming that the optimistic attrition boundary is used (WWC, 2022). If attrition is high, we will establish equivalence of all baseline measures of the outcome of interest (i.e., standardized mean differences less than 0.25 standard deviations), which will be collected prior to the start of the intervention.

Powered to achieve a minimum detectable effect size (MDES) of 0.15 standard deviations for student achievement and 0.31 standard deviations for teacher self-efficacy and instruction, the proposed evaluation will include 60 schools in total and the math teachers in those schools who teach grades 7-8 regular math classes. (See Appendix J for details about power analyses, including information about the meta-analyses that guided the choice of MDESs.)

Teacher and Student Outcomes. The impact analyses will use multiple well-established, reliable measures of teachers' self-efficacy, teachers' instruction, and student math achievement. These outcomes are aligned with the logic model and supporting theory of action shown in Appendix G. The outcome measures are not over-aligned with HOPE PD and will be consistently collected in both treatment and control conditions.

AIR will use existing survey scales with sufficient reliability from the *Teacher Efficacy and Attitudes toward STEM (T-STEM)* survey from the Friday Institute for Educational Intervention (2012) to measure aspects of teachers' self-efficacy with and use of high-quality math instructional practices ($\alpha = 0.943$ and $\alpha = 0.929$, respectively). Teachers will complete the survey containing these scales before random assignment (as baseline) and again at the end of the one-year PD program for each cohort. (See Appendix J for a list of survey items and associated reliabilities.)

To measure the primary student outcome for the project evaluation, students' math achievement, we

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will use test scores from North Carolina's End of Grade state tests. We will obtain these data from participating districts' administrative records, which are considered valid and reliable by WWC standards. To make test scores comparable across grades, subjects, and years, scores will be expressed as *z*-scores based on the statewide mean and standard deviation for their respective grade and year.

Impact Analysis. AIR will examine teacher survey outcomes and student test scores in an ITT model that includes all schools regardless of level of implementation. We will assess the impact of the HOPE PD on both teacher and student outcomes (RQs 1-2) and conduct moderation analyses (RQ 3) and mediation analyses (RQ 4) with data pooled across grades 7-8. (See Appendix J for technical details about analytic methods.) Controlling for baseline characteristics such as pretest scores and student demographics using the full randomized sample for students and teachers, we will regress each outcome on an indicator for whether a participant is in a school assigned to receive HOPE PD to estimate the effect of HOPE PD on the respective outcomes. We will use multilevel models and will cluster standard errors at the school level to account for the nesting of students and teachers within schools, the unit of randomization. The team will account for missing data in the impact analyses in accordance with WWC guidance.

E2. Methods That Provide Performance Feedback and Periodic Assessment of Progress

The multicohort design of the proposed evaluation will include regular collections of implementation data from a variety of sources for the pilot and two impact cohorts. (See Appendix J for detail.) The implementation data will be used to assess the fidelity of implementation (RQ 5), gather participant perspectives of the program (RQ 6), and examine the factors that hinder or facilitate implementation (RQ 7). Data collected from two pilot study schools during the 2025-26 school year will be instrumental in refining the HOPE PD program and preparing for implementation in a rigorous impact evaluation. The additional data collected from the impact cohorts during the 2026–27 and 2027–28 school years will allow us to continue to gather feedback on program implementation and assess its difference from typical professional support (RQ 8) throughout the impact study.

To assess the extent to which the HOPE PD program is implemented as intended (RQ 5), AIR will collect SREB program data for the summer institute and in-person workshops, SREB program data for the virtual professional learning (PL) sessions, teacher coach logs, and teacher leader logs. These data sources

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will include the date, duration, content covered, and teacher and AP attendance at the associated activity. For the **pilot and impact studies**, we will collect SREB program data after the relevant HOPE PD activity, teacher coach logs after each coaching session, and teacher leader logs after each PLC session. We will conduct descriptive analyses of these data to determine the extent to which (a) the program was implemented on the intended timeline, with the intended dosage, and addressed the intended content and (b) teachers and APs participated in the relevant HOPE PD activities.

Data to assess participant perspectives (RQ 6) and factors that hinder or facilitate implementation (RQ 7) will include feedback forms, focus groups, and perspectives surveys. The feedback forms will gather participant perspectives of the value of HOPE PD activities for enhancing their understanding of high-quality math instruction and improving their practice, as well as suggestions for improvement. The focus groups and surveys will gather participant perspectives of the usefulness of the program overall for improving their practice, the potential for it to have an impact on student outcomes, and suggestions for improvement. Together with the data to assess implementation fidelity, these data will provide information about the feasibility of implementing the program and will be used to identify areas for refinement.

For the **pilot study**, AIR will (a) collect teacher and AP feedback forms after the summer institute and after each in-person workshop and (b) conduct focus groups with all eight teachers and both APs in the fall and spring. The feedback forms will collect participant perspectives on the HOPE PD activities completed at that time. We will audio record and transcribe all focus groups. For the **impact study**, we will collect perspectives survey data from all 60 treatment teachers and 15 APs in each cohort in the spring of the intervention year (i.e., 2026-27 for the first impact cohort and 2027-28 for the second impact cohort). The survey questions will collect feedback on all HOPE PD activities completed that year.

We will conduct descriptive analyses of the feedback form and perspectives survey data and use an inductive approach to analyze the transcriptions of the interviews and focus groups. For the latter, we will map the data onto a coding structure that aligns with the topics covered in our focus group protocols. Once researchers achieve inter-coder reliability, we will perform an initial round of deductive coding to categorize the data into broad constructs aligned with the protocols, followed by an inductive round of coding to identify emergent themes that we will discuss as a team.

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We will regularly review the various types of implementation data and share what we have learned from those data with SREB during monthly meetings and in quarterly reports, focusing on progress made and obstacles encountered in program implementation as well as actionable feedback. We will also conduct preliminary analyses of program impact on teacher and student outcomes after the end of the program year for the first impact cohort. The results will be informed by analyses of the difference between experience in HOPE PD and business-as-usual professional support (i.e., service contrast), as measured by teacher and AP surveys administered to all study participants in the spring of the program year of the impact study. We will share the findings from these analyses with SREB.

E3. Clear Articulation of Components, Mediators, Outcomes and Thresholds

The design of the proposed evaluation is informed by clearly articulated key program components, mediators, and outcomes as depicted in the logic model presented in Appendix G. As the conceptual framework shows, HOPE PD includes two key components, each having multiple subcomponents. The first key component is teacher professional learning, which includes three subcomponents: (a) a summer institute; (b) in-person workshops, lesson enactment and coaching associated with the HOPE model; (c) virtual professional learning (PL) sessions for content-focused PD; and (d) school-based PLCs. The second component is school leader development, which includes three subcomponents: (a) participation in the teacher summer training and HOPE workshops, (b) school leader PLCs, and (c) school leader coaching. The implementation study will examine these features of the program (RQs 5-7) and differences in professional learning experience between treatment and control groups (RQ 8). Together, the two key components of HOPE PD are expected to improve teacher efficacy with and use of high-quality math instructional practices (RQ 1). These teacher outcomes are hypothesized to mediate the impact of the HOPE PD on student math achievement (RQs 2, 4). The evaluation will include moderation analyses (RQ 3) and mediation analyses (RQ 4) to explore the relationships among implementation context, teacher outcomes, and student math achievement. See Appendix J for a summary and timeline for all data collection and evaluation activities.

The evaluation will measure the fidelity of implementation of the program key components. We have identified fidelity markers and initial implementation thresholds for each. Table 8 shows the fidelity

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markers, initial implementation thresholds and data sources for each key component (See Appendix J for more detail on the data sources.) We will work with SREB and draw on the implementation data from the pilot cohort to finalize the fidelity thresholds and apply them to the impact cohorts.

Table 8. Key Program Components, Fidelity Markers and Data Sources

Key component and	Fidelity Markers	Fidelity Thresholds	Data Source
Teacher professional learning and school leader development: Summer Institute	SREB offers 3-day summer institute	<ul style="list-style-type: none"> • SREB offers 100% of the training as intended • Teachers and APs attend at least 80% of the training and coaching sessions 	Summer institute program data
Teacher professional learning and school leader development: In-person quarterly workshops	SREB offers 4 full-day, in-person workshops	<ul style="list-style-type: none"> • SREB offers 100% of workshops as intended • Teachers and APs attend at least 80% of the workshops • At least 80% of teachers plan to use the strategy associated with each workshop in at least one lesson 	In-person workshop program data
Teacher professional learning: Teacher virtual coaching	SREB offers 4, one-hour virtual coaching sessions for each teacher	<ul style="list-style-type: none"> • SREB offers 100% of the coaching sessions as intended • At least 80% of teachers enact and video record 4 lessons • At least 80% of teachers attend 4 coaching sessions 	Teacher coach logs
Teacher professional learning: Teacher virtual PL sessions	SREB offers 8 two-hour virtual PL sessions	<ul style="list-style-type: none"> • SREB offers 100% of the virtual PL sessions as intended • At least 80% of teachers attend 4 virtual PL sessions 	Virtual PL session program data
Teacher professional learning and school leader development: School-based PLCs	Teacher leaders facilitate 8 PLCs with teachers in their school	<ul style="list-style-type: none"> • At least 80% of teacher leaders offer 8 PLCs as intended • At least 80% of teachers attend 8 PLCs 	Teacher leader log
School leader development: Virtual PLCs and in-person coaching	SREB offers 8 virtual leadership PLCs and 4 days of in-person coaching	<ul style="list-style-type: none"> • SREB offers 100% of the virtual PLCs and in-person coaching sessions as intended • At least 80% of TLs and APs participate 8 PLCs and 4 in-person coaching sessions 	Virtual PLC and in-person coaching program data