AdvanceSTEM

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Advancing Achievement and Equity through STEM Instruction and Leadership (AdvanceSTEM) addresses Absolute Priority 1 (Human Capital Management Systems and Performance Based Compensation Systems), Absolute Priority 2 (High-Need Schools), Competitive Preference Priority 1 (Supporting Educators and Their Professional Growth) and Competitive Preference Priority 2 (Increasing Educator Diversity).

This initiative is a partnership of the Tracy Unified School District (TUSD: Tracy, CA) and the Community Training and Assistance Center (CTAC, the applicant). Tracy is representative of many communities that have undergone major economic and demographic changes in the last decade. TUSD now has a primarily high-need student population. TUSD has put in place key building blocks which form the foundation for advancing achievement and equity through STEM.

CTAC is a national leader in human capital management reform and performance-based compensation. CTAC's capacity building and evaluation services supported the Denver Public Schools in launching the ground-breaking Pro-Comp Initiative, which catalyzed the enactment of the federal Teacher Incentive Fund (TIF) program. For more than 20 years, CTAC has worked with school districts and charter networks to develop, implement, and evaluate TIF and Teacher and School Leader (TSL) initiatives that strengthen the capacity of educators, increase student achievement in high-need schools, and create greater equity in district practices and results.

A. Need for Project

A.1. Identify Gaps and Weaknesses

TUSD students must be prepared to compete in the regional STEM economy. Tracy is a bedroom community of the Silicon Valley, home to one of the world's largest tech economies. A STEM economy requires TUSD to ensure all students are STEM competent.

STEM occupations account for more than 50% of the employment in major U.S. industries (Fayer et al., 2017). Employment in STEM fields is growing faster than in all other occupations (Zilberman & Ice, 2021). Engineering and computer science make up the largest occupation

groups in STEM—80% of total STEM employment—and those with the highest growth prospects (Martinez & Christnacht, 2021; Fayer et al., 2017).

The urgent need for STEM competence is particularly acute among underrepresented populations. Women fill 50% of STEM jobs (Fry et al., 2021), but only 15% in engineering and 25% in computer science (Fry et al., 2021). Black and Hispanic professionals have STEM jobs (9% and 8%, respectively) at levels disproportionate to their overall representation in the workforce (11% and 18%) (Fry et al., 2021).

These inequities in the STEM workforce are particularly relevant to TUSD. Once a predominantly White middle-class community, TUSD now has a primarily high-need student population. Student enrollment is 54% Hispanic, 5% Black, and 26% English Language Learners (ELL); 48% of TUSD students are female; 54% receive free or reduced-price lunch (FRPL) (see Table 1). Particularly because the diversity of the STEM workforce is tied to equity and representation in STEM education (Fry et al., 2021), all of TUSD's students must be STEM competent.

TUSD is a high-need school district. Thirteen of TUSD's 17 schools are high-need schools. Students from low-income families and students of color make up the majority of TUSD enrollment. These 13 high-need schools, where 51% to 80% of students receive free or reduced-price lunch, are the primary focus of the AdvanceSTEM initiative (see Table 1 and Appendix E). The project serves 14,199 students, 510 STEM teachers (two-thirds of the TUSD teaching force), and principals at all 17 schools.

In Tracy, low-income students and their families have significant needs not always reflected in free and reduced-price lunch data. For example, 5.4% of TUSD's students are homeless as compared with San Joaquin County (2.7%) and California overall (3.1%).

Table 1. High-Need Schools in TUSD

School Name	Enrollment	FRPL	Percent FRPL	High-Needs	Black*	Hispanic	White	Others
Bohn (K-5)	378	228	60.3%	Yes	8.5%	53.2%	17.2%	21.1%
Central (K-5)	443	351	72.9%	Yes	4.3%	74.9%	6.3%	14.5%
Hirsch (K-5)	481	258	53.6%	Yes	6.2%	44.1%	20.4%	29.3%
McKinley (K-5)	450	291	64.7%	Yes	4.0%	65.1%	12.0%	18.9%
South/West Park (K-5)	807	597	74.0%	Yes	4.3%	77.3%	4.8%	13.6%
Villalovoz (K-5)	436	294	67.4%	Yes	3.9%	66.1%	16.1%	13.9%
Freiler (K-8)	759	390	51.4%	Yes	3.4%	43.0%	19.2%	34.4%
Jacobson (K-8)	575	355	61.7%	Yes	5.9%	55.7%	13.2%	25.2%
Kelly (K-8)	978	397	40.6%	No	5.1%	30.0%	21.9%	43.0%
North (K-8)	741	591	79.8%	Yes	3.4%	76.7%	5.7%	14.2%
Poet-Christian (K-8)	515	192	37.3%	No	4.3%	46.0%	28.3%	21.4%
Monte Vista (6-8)	839	563	67.1%	Yes	5.6%	64.5%	10.1%	19.8%
Williams (6-8)	923	525	56.9%	Yes	5.6%	57.5%	16.3%	20.6%
Kimball (9-12)	1,605	577	36.0%	No	7.6%	36.4%	22.2%	33.8%
Stein (11-12)	116	74	63.8%	Yes	6.9%	78.4%	6.0%	8.7%
Tracy (9-12)	1,894	697	36.8%	No	5.0%	48.3%	27.3%	19.4%
West (9-12)	2,259	1,255	55.6%	Yes	6.2%	56.3%	13.7%	23.8%
Total	14,199	7,635	53.8%	…	5.4%	53.7%	16.9%	23.9%

*The terms Black and African-American are used interchangeably in the CA ESSA Plan.

TUSD has persistently low academic achievement in STEM subjects. Continuing a multiyear trend of low performance, TUSD students—especially at high-need schools—show persistently low achievement in math and science courses. Further, in comparison to White students, Black and Hispanic students underperform by nearly 20 percentage points in both subjects. The achievement levels of TUSD's Hispanic students—the largest student population in the district—are lower than their peers in California.

Low academic performance in STEM, as seen in the TUSD data in Table 2, has far-reaching effects. It limits students' ability to participate in advanced math and science learning. It hinders TUSD students' ability to go to college and enter STEM careers. TUSD's high-need students require greater opportunity and support to achieve at high levels in math and science.

Table 2. Math and Science Achievement, Percent Met or Exceeded Standards, 2018–19 California Assessment of Student Performance and Progress (CAASPP)

School Name	High-Needs	Percent Black		Percent Hispanic		Percent White		Percent Others	
		Math	Sci	Math	Sci	Math	Sci	Math	Sci
Bohn (K-5)	Yes	18.8	N/A	27.2	5.1	25.6	14.3	38.6	N/A
Central (K-5)	Yes	N/A	N/A	22.5	13.4	46.7	N/A	41.7	N/A
Hirsch (K-5)	Yes	16.7	N/A	35.0	17.2	53.2	57.1	49.9	N/A
McKinley (K-5)	Yes	N/A	N/A	22.3	11.5	24.0	9.1	61.9	N/A
South/West Park (K-5)	Yes	35.3	N/A	14.4	9.3	52.9	71.4	68.8	52.9
Villalovoz (K-5)	Yes	N/A	N/A	42.0	14.5	53.2	42.1	54.7	N/A
Freiler (K-8)	Yes	25.0	N/A	36.9	35.1	44.7	51.1	45.2	44.7
Jacobson (K-8)	Yes	17.7	N/A	28.2	11.8	25.0	9.5	34.5	22.9
Kelly (K-8)	No	24.3	N/A	36.6	21.5	48.1	38.7	55.6	35.2
North (K-8)	Yes	21.1	N/A	17.8	7.8	34.9	N/A	12.9	N/A
Poet-Christian (K-8)	No	17.6	N/A	34.5	13.8	55.6	41.2	53.4	N/A
Monte Vista (6-8)	Yes	11.9	4.8	15.0	11.4	34.9	41.4	35.0	24.9
Williams (6-8)	Yes	18.6	21.7	14.8	17.9	32.8	40.3	47.6	30.8
Kimball (9-12)	No	25.7	14.3	28.7	24.1	40.0	34.7	52.9	42.8
Stein Cont. (11-12)	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tracy (9-12)	No	21.1	26.1	15.6	23.4	36.1	37.5	52.6	38.9
West (9-12)	Yes	12.5	18.2	20.0	21.9	45.7	36.9	54.7	36.7
TUSD Total	…	19.0	16.5	22.1	16.8	41.3	37.2	47.4	35.5
State Total	…	20.6	13.6	28.1	18.8	54.2	44.4	65.2	51.3

TUSD needs to improve the human capital management system. This pattern of underperformance, especially at high-need schools, reveals gaps in TUSD's human capital management system (HCMS). The gaps are in three areas: developing talent, aligning incentives to STEM priorities, and building a diverse workforce.

Gap 1: Developing Talent

Students need teachers with high levels of STEM knowledge and instructional skill. Teacher effectiveness contributes greatly to student academic outcomes (Opper, 2019). The indicators TUSD uses to evaluate teachers' knowledge and instruction all paint a picture of their having limited STEM content knowledge and low instructional effectiveness, particularly with diverse learners.

In the 2019–2020 teacher evaluation cycle, fewer than 30% of TUSD teachers were rated as highly effective for their content knowledge. Using a validated classroom observation instrument, the Collaborative Instructional Review (CIR, developed by the International Center for Leadership in Education), administrators found only 12% of classrooms have highly effective instruction. Most alarming, *19% of classrooms showed evidence of the lowest level of instruction* in meeting common expectations across the three domains of rigorous, relevant, and engaging instruction.

Schools need principals who can provide STEM instructional leadership. With effective instructional leadership from the principal, teachers grow more effective and in turn, increase student achievement (Grissom et al., 2021). In the past two years of evaluations, none of the principals at the 13 high-need schools has been rated highly effective. Their evaluations further indicate that principals (eight of whom have been hired in the past four years) have weaknesses related to California Professional Standard 2: Instructional Leadership. Their evaluations also reveal that principals need to be more effective at using teacher observations to improve STEM instruction.

Schools need a deep pool of instructional leadership capacity for STEM achievement. Principals alone cannot succeed in providing instructional leadership at the schools. Instructional Leadership Teams (ILT) are an approach which supports principals to broaden and deepen instructional leadership capacity within schools (Klar, 2013; Stosich, 2020). Yet, TUSD does not currently have a formalized structure for developing and distributing STEM instructional leadership. Thus, the depth of STEM instructional leader support available to teachers is lacking. TUSD needs to establish and develop strong, school-based STEM ILT.

Response to Gap 1. AdvanceSTEM provides targeted, customized professional development to teachers with significant gaps in STEM knowledge and pedagogy. Continuously developing the talent of STEM teachers is central to the initiative. AdvanceSTEM also develops principals'

knowledge of STEM content and standards. It improves their instructional leadership so they can increase the effectiveness of their STEM teachers. It strengthens the ability of principals to implement the teacher evaluation system with fidelity. Further, AdvanceSTEM establishes STEM ILTs to broaden the instructional leadership capacity of the schools and provide ongoing coaching and support to STEM teachers. AdvanceSTEM also trains all STEM teachers, principals, and ILTs on addressing bias and reaching diverse learners with high quality STEM instruction.

Gap 2: Aligning Incentives to STEM Priorities

TUSD needs to recognize and reward effective STEM instruction, leadership, and students' STEM achievement. Developing and rewarding instructional improvement and instructional leadership are linked to stronger student achievement and growth (Gates et al., 2019; Hamilton et al., 2012; Slotnik et al., 2004; Slotnik et al., 2013; McRobbie et al., 2016). TUSD needs a performance-based compensation system that recognizes and rewards effective STEM educators who improve their practice and student STEM achievement results.

Response to Gap 2. AdvanceSTEM establishes and aligns performance-based compensation to improved STEM instruction, instructional leadership, and student results. By so doing, TUSD underscores its commitment to STEM as the district's future.

Gap 3: Building a Diverse Workforce

TUSD needs a more diverse teacher workforce. Despite serving a diverse student population, TUSD's teaching force is 18.1% Hispanic and 3.3% Black. The mismatch between the composition of the student body and the composition of the teaching force is significant because the outcomes of students of color improve when they are taught by a same-race teacher (Dee, 2004). This mismatch reflects a weakness in TUSD's HCMS recruitment strategies. TUSD recognizes the need to recruit talented STEM teachers of color to the district as a core part of the effort to increase achievement of all students, especially in high-need schools.

TUSD needs to transition effective STEM teachers of color into school leadership positions. There is a similar mismatch with TUSD's school leaders. Of the 17 principals, 3 are Hispanic; 2 are Black. Of the 15 assistant principals, 2 are Hispanic; 2 are Black. Having a principal of color is associated with improved academic performance for students of color (Pitts, 2007). TUSD needs a pipeline to help skilled STEM teachers of color enter school leadership positions.

Response to Gap 3. AdvanceSTEM fundamentally changes human resources practices and implements targeted recruitment strategies for STEM teachers of color. AdvanceSTEM also provides an Aspiring Principals Leadership Academy which identifies, prepares, and transitions STEM teachers of color to become STEM instructional leaders at the schools.

A.2. Build on Related Efforts

To change a pattern of students' STEM underperformance requires making significant improvements to curriculum, instruction, and leadership. TUSD has already put in place several foundational efforts. AdvanceSTEM integrates with and builds on these efforts to address *the most critical outcome: making demonstrable improvements in student STEM achievement*.

TUSD enacts state content standards. TUSD began by resolutely focusing on California Content Standards as the basis of educational services in English language arts (ELA) and math. TUSD invested over $1.7 million of district funds in developing classroom materials and assessments.

TUSD was a trailblazer in the transition to the new California Science Standards. It was one of only eight California districts awarded a $956,000 foundation grant—matched with more than $600,000 in district funds—to become a K–8 Next Generation Science Standards Early Implementation Initiative (EII) district.

TUSD invests in STEM as the next leap forward. While shifting all instruction to the new standards in ELA, math, and science, the Superintendent received a report from the City Manager of Tracy and local industry leaders. The report stated that local economic development

was limited by the need for more STEM-competent graduates from TUSD. In 2018, TUSD partnered with CTAC and was awarded an Education Innovation and Research grant from the U.S. Department of Education, *Leadership of STEM: The PreK-12 Pathway*.

TUSD has transformed the curriculum through this initiative. Every student in grades PreK-12 now receives four rigorous, engaging STEM experiences each year in their core math and science classes. In less than two years, *TUSD has developed 52 PreK-12 STEM units* supported by $2.3 million from USEd and $1.6 million from TUSD.

This curriculum is interdisciplinary—referred to as integrated STEM—and highlights engineering design challenges and computer science. Through problem-based learning, students now work individually and in cooperative groups to solve challenging problems with real-world applications. The entire classroom dynamic is fully student-centered.

TUSD has further committed $2.2 million of ESSER resources to provide the materials needed for more hands-on learning opportunities in integrated STEM courses.

The PreK-12 Pathway provides every TUSD student an equitable STEM learning pathway that progresses through elementary, middle, and high school. It embeds integrated STEM in the core curriculum rather than elective courses. This approach ensures that all students, including those previously underrepresented in STEM (girls, students of color, and low-income students), now have access to a robust STEM curriculum.

TUSD commits to inquiry-based instruction. TUSD recognized that reinvention of the curricula necessitates fundamental changes in how teachers deliver instruction. Therefore, teachers must first understand how inquiry-based teaching of integrated STEM differs from past practice.

TUSD identified specific indicators for rigorous, relevant, and engaging instruction and codified these indicators with the Collaborative Instructional Review (CIR) instrument, developed by the International Center for Leadership in Education (Daggett, 2016). TUSD

trained all principals and teachers on using the CIR to recognize specific evidence of effective student learning. This training was supported by $1.3 million dollars of funding from CA's Local Control Accountability Plan and Title I. Subsequent classroom observations confirmed that many students are not yet experiencing equitable and effective instruction (as described in A.1, above).

TUSD mobilizes STEM employers. TUSD has convened the Community Collaboratory. Through this vehicle, Tracy's 20 major STEM-related employers provide professional input on the design challenges and visit classrooms to connect academic learning to actual STEM professions.

TUSD provides instructional resources for remote STEM learning. Due to the COVID-19 pandemic, TUSD students spent the majority of the 2020–2021 school year learning remotely. During this time, TUSD continued to provide integrated STEM lessons to all students. Moreover, recognizing inequities in the economic capabilities of families, TUSD ensured all students had the necessary materials to complete hands-on design challenges at home.

TUSD improves educator evaluation system. TUSD began the critical step of overhauling the evaluation system to update performance expectations. TUSD moved from a "check box" evaluation system to one focused on career growth through talent development. TUSD adopted new evaluation rubrics aligned to California Professional Standards for Educational Leaders (CPSEL) and the California Standards for the Teaching Profession (CSTP) to promote rigorous standards for principals' and teachers' performance. Moreover, both the Tracy Educators Association (TEA) and the Tracy School Management Association (TSMA) collaborated with the district in supporting this new evaluation system.

AdvanceSTEM builds on TUSD's efforts. TUSD has taken critical foundational steps for changing the focus and culture of its schools. However, they are not yet translating to increased student achievement.

AdvanceSTEM directly addresses this need for better student results. AdvanceSTEM develops teachers' ability to effectively implement the integrated STEM curriculum and increase student achievement. It builds the capacity of principals and STEM ILTs to develop content knowledge and improve their inquiry-based STEM instruction. AdvanceSTEM addresses gaps in the principals' ability to observe and evaluate a teacher's STEM instruction.

Most critically, AdvanceSTEM expands the reach and impact of TUSD's HCMS to increase equity of opportunity and results for TUSD's students, particularly at high-need schools.

A.3. Comprehensive Effort to Improve Teaching and Learning

AdvanceSTEM is the pivotal next step in TUSD's multi-year, comprehensive effort to improve the quality of teaching, instructional leadership, and students' STEM academic achievement. AdvanceSTEM is a three-year initiative to address TUSD's identified gaps (described in Section A.1) with an improved and expanded HCMS.

By developing talent, AdvanceSTEM improves teachers' ability to implement rigorous academic standards—in science and engineering, computer science and math—in the classroom. It particularly supports high-need students by integrating high quality STEM instruction into their core math and science courses. AdvanceSTEM further supports effective instruction by developing the instructional leadership capacity of principals and ILT members.

By aligning incentives to STEM priorities, AdvanceSTEM establishes a Performance Based Compensation System (PBCS) which recognizes and rewards educators who improve their instructional practice and increase student STEM academic growth. This aligns the compensation system with the district focus on STEM.

By building a diverse workforce, AdvanceSTEM addresses the need to successfully recruit more STEM teachers of color and creates a pipeline for STEM teachers of color to transition to school leadership positions. These are requisites in a district whose student population is largely students of color.

A.4. Successfully Addressing Needs

The project design provides a comprehensive response to the gaps in the HCMS which TUSD must address to raise STEM student achievement and advance equity of STEM opportunity and results. AdvanceSTEM's three project components directly address these gaps.

Table 3. Project Design: Strategies Aligned to Needs

Needs	AdvanceSTEM Aligned Strategies
Component 1: Developing Talent	
• Students need teachers with high levels of STEM knowledge and instructional skill. • Schools need principals who can provide STEM instructional leadership. • Schools need a deep pool of instructional leadership capacity for STEM achievement.	• Provide targeted, customized professional development to teachers with significant gaps in STEM knowledge and pedagogy. • Develop principals' knowledge of STEM content and standards and improve their instructional leadership. • Strengthen the ability of principals to implement the teacher evaluation system with fidelity and quality. • Establish and develop STEM ILTs to broaden the instructional leadership capacity of the schools and provide ongoing coaching to STEM teachers. • Train all STEM teachers, principals, and ILTs on addressing bias and reaching diverse learners with high quality STEM instruction.
Component 2: Aligning Incentives to STEM Priorities	
• TUSD needs to recognize and reward effective STEM instruction, leadership, and students' STEM achievement.	• Create a PBCS to reward and recognize educators who improve instructional practices and increase students' STEM achievement. • Reward and recognize teachers who take on new STEM ILT leadership roles.
Component 3: Building a Diverse Workforce	
• TUSD needs a more diverse teacher workforce. • TUSD needs to transition effective STEM teachers of color into school leadership positions.	• Change human resources practices and implement targeted recruitment strategies for STEM teachers of color. • Create an Aspiring Principals Leadership Academy—a pipeline for effective STEM teachers of color to transition to school leadership positions.

Overall. AdvanceSTEM improves and expands TUSD's HCMS to address the gaps that are resulting in underperformance of TUSD's high-need students in STEM. Through three key components—developing talent, aligning incentives to STEM priorities, and building a diverse workforce—AdvanceSTEM creates equity of STEM learning opportunities and results. It builds the capacity of educators to deliver high quality STEM instruction, provide effective STEM instructional leadership, and improve student STEM achievement. It recognizes and rewards improvements in STEM instruction and student achievement. It increases the diversity of TUSD's STEM teachers and school leaders. Most critically, AdvanceSTEM ensures that all students, particularly at high-need schools, have a robust STEM education.

B. Quality of the Project Design

B.1., B.2.a. Rationale with Relevant Literature

AdvanceSTEM's rationale is that improving and expanding TUSD's HCMS is essential to increasing student STEM achievement. Advancing STEM learning requires strengthening teacher STEM content knowledge and instructional skills and providing effective STEM instructional leadership at each school. The focus on STEM learning is enhanced by aligning district recognition and rewards to educators who improve student STEM achievement. Further, diversifying the educator workforce contributes substantively to advancing student STEM achievement. Through this multi-pronged approach, AdvanceSTEM increases equity of STEM learning opportunities and results for all students, particularly in high-need schools.

AdvanceSTEM has six project objectives which directly align to the three key project components: developing talent, aligning incentives to STEM priorities, and building a diverse workforce. The relationship of the project objectives and components to the relevant outcome, increasing student STEM achievement, is illustrated in the logic model (see Appendix A).

Table 4. AdvanceSTEM Objectives by Project Component

Objectives
Project Component: Developing Talent
Objective 1. Develop STEM teachers' ability to provide highly effective STEM instruction to increase student achievement
Objective 2. Develop principals' ability to provide highly effective STEM instructional leadership to increase student achievement
Objective 3. Deepen schools' capacity, through STEM ILTs, to provide highly effective STEM instructional leadership to increase student achievement
Project Component: Aligning Incentives to STEM Priorities
Objective 4. Reward teachers, principals, and ILT members for improving STEM instruction and increasing student achievement
Project Component: Building a Diverse Workforce
Objective 5. Increase workforce diversity by recruiting STEM teachers of color
Objective 6. Increase workforce diversity by providing a pipeline for STEM teachers of color to transition into school leadership positions

The design of each project component and its relevant literature base is described below.

Component 1: Developing Talent. AdvanceSTEM builds the STEM content knowledge, instructional skills, and instructional leadership of teachers, principals, and STEM ILTs.

Develop teachers with high levels of STEM knowledge and instructional skill. Effective instruction is the result of teachers' ability to apply knowledge of content and instructional skills to their students' learning needs (Stronge, 2018). Effective instruction matters more to student achievement than any school-related factor (Opper, 2019). AdvanceSTEM increases STEM teachers' ability to provide highly effective STEM instruction that focuses on increasing the achievement of TUSD's high-need students in math and science. Schools where instructional quality is higher have students with higher academic achievement (Quint et al., 2007).

AdvanceSTEM provides training for teachers to achieve the STEM content mastery needed to implement the 52 PreK-12 STEM units with fidelity and quality. Each interdisciplinary unit is grounded in the California Content Standards for science and engineering, computer science, and math. AdvanceSTEM also increases STEM teachers' capacity to use effective instructional

approaches recommended in the CA Science (2016) and Math (2021) Frameworks, such as teaching STEM through sustained inquiry and leading students to solve real-world, hands-on engineering design challenges. AdvanceSTEM prepares teachers for successful STEM instruction, both in-person and remote.

AdvanceSTEM implements STEM-specific induction for STEM teachers in their first two years in TUSD. Studies have established positive relationships between teacher induction and teaching practices (Stanulis & Floden, 2009) and student achievement (Glazerman et al., 2010; Schmidt et al., 2017). Moreover, research found that STEM-specific induction programs are more effective in strengthening the beliefs and improving the instructional quality of beginning STEM teachers (Luft et al., 2003; Roehrig & Luft, 2006; Luft et al., 2011).

AdvanceSTEM trains all STEM teachers, principals, and ILTs on addressing bias and reaching diverse learners with high quality STEM instruction. The training addresses anti-bias and associated educator actions that prevent students of color from receiving the most effective STEM learning. Research has shown that anti-bias trainings have a positive and lasting impact on shaping teachers' attitudes (Wiese et al., 2017), enhancing teachers' cognitive learning (Bezrukova et al., 2016), and ensuring learning opportunities for all students (Murray, 2017). In addition, studies highlighted the importance of integrating anti-bias trainings into a broader diversity strategy to support sustained learning (Bezrukova et al., 2016; Carter et al., 2020).

Develop principals who can provide STEM instructional leadership. Principal leadership is second only to effective instruction among school-related factors that contribute to student achievement (Wallace Foundation, 2013). In particular, research findings have indicated "highly effective principals can raise the achievement of typical students in their school by between two and seven months in a single year" (Branch et al., 2013).

Research has shown that principals' instructional leadership is positively correlated with school culture (Sahin, 2011; Parlar et al., 2021), classroom instruction (Bellibas et al., 2020), teacher professional development (Graczewski et al., 2009) and student achievement (Hou et al., 2019; Robinson et al., 2008).

AdvanceSTEM trains principals to employ STEM instructional strategies, conduct effective STEM observations, lead STEM ILTs, and foster equity and inclusion. This support increases principals' ability to provide highly effective STEM instructional leadership for increasing student achievement.

Develop a deep pool of instructional leadership capacity for STEM achievement. Principals cannot effectively lead instructional improvement alone, particularly in high-need schools (Thessin et al., 2020). One structure that supports principals to deepen instructional leadership capacity within schools is instructional leadership teams (ILTs). These are often comprised of administrators and teacher leaders (Thessin et al., 2020). Such a team-based approach to school instructional leadership can have significant effects on teacher instruction and student achievement (Dexter & Barton, 2021; Heck & Hallinger, 2009).

AdvanceSTEM establishes STEM ILTs to deepen the instructional leadership capacity at each school. STEM ILTs are a new formalized structure for distributed leadership in TUSD which establish new roles for teacher leaders. They provide ongoing, differentiated coaching to teachers to implement their STEM knowledge and skills with fidelity. AdvanceSTEM's ILTs promote principal and teacher leader collaboration and a shared commitment to all students' STEM success: strong predictors of increased student achievement (Grissom et al, 2021).

Component 2: Aligning Incentives to STEM Priorities. AdvanceSTEM establishes a PBCS aligned to improving STEM instruction and increasing student achievement.

Recognize and reward effective STEM instruction, leadership, and students' STEM achievement. When PBCS is implemented effectively, research has indicated that teachers have greater access to student data, use data more effectively to establish growth expectations, focus earlier on students who may need assistance, and monitor progress (Slotnik et al., 2004). Research also has shown that performance-based compensation for principals and school leaders is associated with acceleration in student achievement growth (Hamilton et al., 2012).

In AdvanceSTEM, the PBCS recognizes and rewards the accomplishments of STEM teachers, principals, and ILT members in advancing STEM content mastery, instructional pedagogy, STEM instructional leadership, and student academic growth in math and science. *Two-thirds of teachers in TUSD teach STEM in grades PreK-12 and are eligible for performance-based compensation*. All principals and ILT members are eligible for PBC, see Table 5 below. ILT members are also eligible for incentives for assuming new leadership roles.

Component 3: Building a Diverse Workforce. AdvanceSTEM implements strategies for recruiting STEM teachers of color at high-need schools. It also creates a pipeline to identify, train, and transition STEM teachers of color into school leadership positions.

Build a more diverse teacher workforce. Students are more likely to attend school, achieve, and graduate when at least one of their teachers is the same race or ethnicity (Gershenson et al., 2017). Research has also found that schools with large numbers of teachers of color have a greater representation of students of color in gifted programs (Grissom et al, 2017).

AdvanceSTEM changes TUSD human resources practices and implements research-based recruitment strategies. AdvanceSTEM takes a new approach to recruitment, bridging the responsibilities of the Educational Services Department and the Human Resources Department to make STEM core to recruitment efforts. It implements efforts such as recruiting earlier, partnering with California's network of Hispanic Serving Institutions, and providing professional

growth opportunities for new teachers to partner with leading practitioners in STEM professions through the STEM Community Collaboratory.

Transition effective STEM teachers of color into school leadership positions. Research has highlighted the benefits of racial matches between principals and students. Having a principal of color fosters the cultural responsiveness of teachers to students of color and the community (Hernandez, 2014; Jones, 2002; Sun & Miller, 2020), enhances the recruitment and retention of teachers of color (Jones, 2002; Bartanen & Grissom, 2021), and increases the academic achievement of students of color (Bartanen & Grissom, 2021).

AdvanceSTEM provides an Aspiring Principals Leadership Academy to enable talented STEM teachers of color to transition into school leadership roles. Aspiring principals receive training in employing STEM instructional strategies, conducting effective STEM observations, leading STEM ILTs, and fostering equity and inclusion.

Overall. Deeply rooted in research, these three project components directly address the gaps described in Section A.1, above. AdvanceSTEM improves and expands the HCMS, ensuring TUSD's capacity to improve educator performance and increase students' STEM achievement at high-need schools.

B.2.b. High Quality Plan for Implementation

AdvanceSTEM's implementation plan ensures the success of this comprehensive HCMS initiative. The following delineates the plan by project component.

Component 1. Developing Talent: Implementation Plan

1.1. Developing teachers' STEM content knowledge and instructional skills. AdvanceSTEM provides professional development to increase the STEM content knowledge and instructional practice of teachers, PreK-12, teaching the STEM curriculum units.

Table 5. Implementation Plan: Developing STEM Teachers

1.1. Developing teachers' STEM content knowledge and instructional skills.	
Targeted Group	• All elementary general education and special education (grades pre-kindergarten through grade 6) teaching the STEM curriculum units • All general education and special education teachers for grades 7-12 in core math and science courses teaching the STEM curriculum units
Professional Development Focus and Services	• ***Mastering STEM content***: Science and Engineering, Computer Science, Math standards; engineering design process; computational thinking; software and hardware devices for units' design challenges • ***Employing STEM instructional strategies***: using sustained student inquiry; using the 5E instructional sequence (see Section B.2.c, Methodological Tools); designing lessons with the engineering design process; tailoring in-school and remote instruction for diverse learners; engaging STEM Collaboratory professionals • ***Fostering equity and inclusion***: addressing implicit bias, microaggressions; setting high expectations • ***Implementing TUSD's STEM Vision***: inducting new STEM teachers
Frequency and Providers	• Grade-level teachers receive *quarterly* district-wide training from K-12 curriculum specialists and CTAC • Each school's STEM teachers receive *twice monthly* on-site training from principals/ILTs, K-12 curriculum specialists, and CTAC • Individual teachers receive *weekly* coaching from principals/ILTs • New STEM teachers receive *weekly* STEM Induction support from the Professional Learning Department • All teachers receive *thrice yearly* anti-bias training from the California Teachers Association Human Rights Department
Impact	• High-quality STEM instruction for all students, with evidence of applying learning from training sessions • High student engagement, rigor, and relevance • Increased student achievement in STEM

1.2. Developing principals to provide STEM instructional leadership. AdvanceSTEM builds principal capacity to identify highly effective STEM instruction, determine evidence of STEM student learning, lead the ILT, and use the CIR instrument with teachers to identify and develop their lesson rigor, relevance, and student engagement. It also builds principal capacity to implement the TUSD teacher evaluation system with fidelity and, in concert with the CIR instrument, advance the overall progress of teachers to improve student learning.

Table 6. Implementation Plan: Developing Principals' STEM Instructional Leadership

1.2. Developing principals to provide STEM instructional leadership.	
Targeted Group	• Principals at all 17 schools in this proposal
Professional Development Focus and Services	• ***Employing STEM instructional strategies***: using sustained student inquiry; using the 5E instructional sequence; designing lessons with the engineering design process; engaging STEM Collaboratory professionals • ***Conducting effective STEM observations***: using *CIR* instrument and teacher evaluation rubric effectively; providing specific and personalized support and feedback for improved instruction • ***Leading STEM ILT***: using school data and the *Continuous Improvement Planning Tool for STEM Instruction* • ***Fostering equity and inclusion***: addressing implicit bias, microaggressions; setting high expectations; owning the responsibility to teach all students • ***Addressing challenges of STEM leadership and implementation***: participating in the Principals Working Group (see Section C. Mgmt Plan)
Frequency and Providers	• Principals receive *twice monthly* district-wide training from Developing Talent Committee and STEM Learning Accelerators (see Section C. Mgmt Plan) • Individual principals receive *weekly* coaching from STEM Learning Accelerators and district leaders • Principals participate *monthly* in the Principals Working Group with counsel from STEM director, superintendent, associate superintendents, and CTAC • All principals receive *thrice yearly* anti-bias training from the California Teachers Association Human Rights Department
Impact	• Rapid response capability in STEM ILT • Increased delivery of high-quality STEM instruction for all students, with evidence of teachers applying learning from training sessions • High student engagement, rigor, and relevance • Participation of STEM professionals across grades and classrooms • Increased student achievement in STEM

1.3. Developing a deep pool of instructional leadership capacity for STEM achievement. AdvanceSTEM establishes and develops STEM ILTs to expand instructional leadership capacity for STEM achievement. ILTs at each school are comprised of five-members, the principal and four teacher leaders. STEM ILT members are selected by the AdvanceSTEM Leadership Council and the principal on the basis of their exemplary teaching and high-need students' achievement results. This is a new leadership role for teachers in TUSD. The ILTs set, support, and monitor the school's Continuous Improvement Plan for STEM goals. The ILTs coach and

train STEM teachers individually and in small groups to increase STEM instructional quality and achievement at the school.

Table 7. Implementation Plan: Developing STEM Instructional Leadership Capacity

1.3. Developing a deep pool of instructional leadership capacity for STEM achievement.	
Targeted Group	5-member STEM ILT with expertise in: • Pedagogy/Instruction (Principal) • Computer Science/Computational Thinking (teacher) • Assessment/Data for Planning Instruction (teacher) • Engineering Standards and Practices (teacher) • Integrating English Language Arts within STEM (teacher)
Professional Development Focus and Services	• ***Employing STEM instructional strategies***: using sustained student inquiry; using the 5E instructional sequence; designing lessons with the engineering design process; engaging STEM Collaboratory professionals • ***Conducting effective STEM observations***: using *CIR* instrument; providing specific and personalized support and feedback for improved instruction • ***Collaborating in STEM ILT***: using school data and the *Continuous Improvement Planning Tool for STEM Instruction* • ***Fostering equity and inclusion***: addressing implicit bias, microaggressions; setting high expectations; owning the responsibility to teach all students
Frequency and Providers	• ILT members receive *quarterly* district-wide training from the Developing Talent Committee, Professional Learning Department, CTAC and national resource experts • ILT members receive *monthly* training and coaching from the Professional Learning Department and STEM Accelerators • ILT members receive *weekly* coaching from K-12 Curriculum Specialists
Impact	• Increased frequency of instructional coaching with evidence of classroom implementation • High-quality STEM instruction for all students • High student engagement, rigor, and relevance • Participation of STEM professionals across grades and classrooms

Component 2. Aligning Incentives to STEM Priorities: Implementation Plan

2.1. Recognize and reward effective STEM instruction, leadership, and students' STEM achievement. AdvanceSTEM establishes a PBCS aligned to improving STEM instruction and increasing student achievement. STEM teachers—*who comprise two-thirds of the overall teacher workforce*—principals and ILT members are eligible for financial incentives and rewards. The PBC Committee (see Section C. Management Plan), working with principals,

determines teacher- and school-based achievement targets. Based on the progress of participants in meeting their targets, the PBC Committee recommends awards which are reviewed by and subject to the approval of the Leadership Council (see Section C. Management Plan).

Table 8. Performance Based Compensation by Position and Year

Position / Area of PBC	Measurement	PBC Levels
Year 1		
STEM Teachers		Up to $2,500
Instructional practice	CIR Instrument	($1,000)
Student achievement level 1	STEM Unit rubrics; District math (PreK-12) & science (6-12) assessments	($1,000)
Student achievement level 2		($1,500)
Principals		Up to $4,000
Instructional practice	Principal STEM Instructional Leadership Assessment	($2,000)
Student achievement	STEM Unit rubrics; District math (PreK-12) & science (6-12) assessments	($2,000)
ILTs		Up to $4,000
Additional leadership role	Fulfills the responsibilities	($1,000)
Instructional practice	CIR Instrument	($1,500)
Student achievement	STEM Unit rubrics; District math (PreK-12) & science (6-12) assessments	($1,500)
Years 2 and 3		
STEM Teachers		Up to $4,000
Instructional practice	CIR Instrument	($1,000)
Student achievement level 1	CAASPP; District math (PreK-12) & science (6-12) assessments	($1,500)
Student achievement level 2	CAASPP; District math (PreK-12) & science (6-12) assessments	($3,000)
Principals		Up to $5,500
Instructional practice	Principal STEM Leadership Assessment	($2,000)
Student achievement	CAASPP; District math (PreK-12) & science (6-12) assessments	($3,500)
ILTs		Up to $5,500
Additional leadership role	Fulfills the responsibilities	($1,000)
Instructional practice	CIR Instrument	($1,500)
Student achievement	CAASPP; District math (PreK-12) & science (6-12) assessments	($3,000)

As shown in Table 8, above, STEM teachers receive awards for growth in their instructional practice and for increased student STEM achievement. Teachers receive the Level 1 award for reaching at least 70% of the growth target set by the PBC Committee; they receive the Level 2

award for meeting or exceeding that growth target. Principals' awards are based on their growth as instructional leaders and on the increased student STEM achievement at their school. Teacher members of the STEM ILT receive an award for taking on this new leadership role, for growth in instructional practice of the STEM teachers at the school, and for growth in student STEM achievement at their school.

In Year 1, awards will be based on STEM Unit rubrics (assessments embedded within each of the 52 PreK-12 STEM units) and district math and science assessments. Due to the COVID related waiver of the California Assessment of Student Performance and Progress (CAASPP) testing the previous year, CAASPP results will form a baseline in Year 1 for setting targets in Years 2 and 3. In Years 2–3, CAASPP results will serve as a primary vehicle for determining awards. TUSD's intent is for all students to progress toward meeting or exceeding California's state average for proficiency in math and science.

Component 3. Building a Diverse Workforce: Implementation Plan

3.1. Build a more diverse teacher workforce. AdvanceSTEM fundamentally changes human resources practices and implements targeted recruitment strategies for STEM teachers of color.

Table 9. Implementation Plan: Build a More Diverse Teacher Workforce

3.1. Build a more diverse teacher workforce.	
Targeted Group	• Potential STEM teachers of color • Human Resources Department • Educational Services Department
Professional Development Focus and Services	• ***Engaging Educational Services in Human Resources recruitment***: creating shared ownership of recruiting and supporting teachers of color • ***Focusing targeted recruitment strategies***: partnering with CA network of Hispanic Serving Institutions for recruitment; using STEM as the driver for recruitment and placement practices; inviting teachers of color to teach in a dynamic STEM education setting; magnifying the value of inquiry-based, interdisciplinary instruction for high need students; emphasizing the support for teachers of color to become school leaders • ***Developing connections with STEM Collaboratory professionals***: expanding connections to enable new teacher hires to partner with practitioners in STEM industries

	• ***Fostering equity and inclusion***: addressing implicit bias, microaggressions in recruitment; expanding partnerships with Hispanic Serving Institutions
Frequency and Providers	• The Human Resources Department and Educational Services Department staff receive *ongoing* training and facilitation from the Developing Talent Committee, Workforce Diversity Committee and national resource experts (see Section C. Management Plan)
Impact	• New recruitment practices • Increased hiring and support of STEM teachers of color

3.2. Transition effective STEM teachers of color into school leadership positions.

AdvanceSTEM provides an Aspiring Principals Leadership Academy which identifies, prepares, and transitions STEM teachers of color into leadership positions at the schools. Customized to STEM instructional leadership, the Academy is based on the Aspiring Leadership program of the Maryland State Department of Education which has been recognized as a national exemplar by the Council of Chief State School Officers and the National Governors Association.

Table 10. Implementation Plan: Transitioning into School Leadership Positions

3.2. Transition effective STEM teachers of color into school leadership positions.	
Targeted Group	• STEM teachers of color in TUSD, with demonstrated exemplary teaching and high-need student achievement, who aspire to become school leaders
Professional Development Focus and Services	• ***Employing STEM instructional strategies***: using sustained student inquiry; using the 5E instructional sequence; designing lessons with the engineering design process; engaging STEM Collaboratory professionals • ***Conducting effective STEM observations***: using *CIR* instrument and teacher evaluation rubric effectively; providing specific and personalized support and feedback for improved instruction • ***Leading STEM ILT***: using school data and the *Continuous Improvement Planning Tool for STEM Instruction* • ***Fostering equity and inclusion***: addressing implicit bias, microaggressions; setting high expectations
Frequency and Providers	• Identified STEM teachers of color receive *monthly* training from the TUSD Educational Services Department and CTAC Team, using the Maryland model, through the Aspiring Principals Leadership Academy
Impact	• Supported transition into school leadership positions • Increased hiring of school leaders of color

B.2.c. Methodological Tools

AdvanceSTEM uses field-proven methodological tools to ensure successful achievement of project objectives. These tools, aligned to project objectives, are delineated in Table 8.

Table 11. Methodological Tools

Methodological Tools	Objectives
CIR instrument. This instrument formatively assesses student learning in process based on three domains of instructional quality: rigor, relevance, and engagement.	1, 2, 3, 4
5E instructional model. This model's five phases rest on a foundation of cognitive science research findings on how people learn. It is designed to engage students in inquiry, exploration, and explanation of their learning.	1, 2, 3
Plan, Do, Study, Act. In grade level or course teams, teachers use students' work results and the Plan, Do, Study, Act process to plan instruction and set and monitor short-term goals for student learning	1, 2, 3
Principal STEM Instructional Leadership instrument. This instrument, developed by TUSD/CTAC through the EIR initiative, rates and informs improvements to principals' STEM instructional leadership.	2, 4
TUSD Continuous Improvement Planning Tool for STEM Instruction. This tool is used for analyzing data, setting goals, implementing new learning, and monitoring, assessing, and adjusting practices.	1, 2, 3
TUSD Principal Evaluation Rubric. This rubric is based on rigorous state standards for principal performance.	2
TUSD Teacher Evaluation Rubric. This rubric is based on rigorous state standards for teacher performance.	1, 2
STEM Unit Rubrics. These rubrics assess student results from the Engineering Design Challenges embedded in the 52 PreK-12 STEM units.	1, 2, 3, 4
District Math and Science Assessments. These are the district assessments in math (PreK-12) and science (6-12).	1, 2, 3, 4
CAASPP Math and Science Assessments. These are the state assessments used in years 2 and 3 of the initiative. Year 1 serves as the baseline.	1, 2, 3, 4
HR Teacher Recruitment Protocols. These are the updated HR recruitment practices targeting STEM teachers of color and include hiring goal metrics.	5
HSI Partnerships. These are the number of effective, strategic partnerships between TUSD and the CA network of Hispanic Serving Institutions (HSI).	5
Aspiring Principals Leadership Academy. This is the vehicle for advancing TUSD STEM teachers of color into school leadership positions.	6

B.3. Methods of Evaluation

Serious efforts to improve educator performance and student achievement must be guided by evidence and analysis of what is working and what changes need to be made to continually improve project outcomes. CTAC is a national leader in conducting TIF/TSL evaluations, having evaluated initiatives in Denver, CO; Charlotte-Mecklenburg, NC; Prince William County, VA; Henrico County, VA; Delhi, CA; and Harmony Public Schools, TX. CTAC is conducting the AdvanceSTEM evaluation.

Overview. The evaluation strategy is two-fold. The first part is comprehensive and focuses on the overall TSL initiative. It provides ongoing evaluative feedback, an annual formative evaluation of progress, and a summative evaluation at the end of the grant period. The second part is targeted and focuses on the study of the professional development component of TUSD's HCMS. The resultant analyses provide ongoing performance feedback to TUSD and inform mid-course improvements.

Part 1. Comprehensive Evaluation of AdvanceSTEM. Using a mixed-methods approach with both qualitative and quantitative data, CTAC carries out an ongoing *formative* evaluation that provides regular performance feedback and assessment for adjustments and improvement, and a *summative* evaluation to assess progress toward achieving the intended impacts.

The multiple sources of data include: (1) interviews and focus groups with educators, parents, and students; (2) survey responses from educators, parents, and students; (3) teacher, principal, and ILT evaluation and performance data; (4) financial incentive payout data; (5) human resources data; (6) artifacts; and (7) student achievement data. These data are used in the project evaluation and the study of the HCMS Professional Development.

The following key questions guide the comprehensive evaluation of the initiative:

- To what extent is AdvanceSTEM being implemented with fidelity?
- What factors enhance or impede effective implementation of AdvanceSTEM?
- To what extent does AdvanceSTEM improve teachers' STEM instruction, principals' STEM leadership, and ILTs' STEM instructional leadership?
- To what extent does AdvanceSTEM increase the diversity of STEM teachers and principals?
- What is the impact of AdvanceSTEM on student STEM achievement?

These questions focus on both the implementation and the impact of the AdvanceSTEM initiative. In assessing the fidelity with which AdvanceSTEM is implemented and the effect it

has on key outcomes, the evaluation is specifically designed to help inform TUSD's efforts to make continuous improvements over the life of the grant.

Data Collection and Analysis

Interviews and Focus Groups. CTAC conducts confidential interviews and focus groups annually with educators, parents, and students using protocols developed in collaboration with TUSD. We customize the protocols to the role of the participant and examine the perceptions of frontline educators on the implementation and impact of the components of AdvanceSTEM. CTAC conducts thematic analyses to identify common themes and key issues in the discussions based on similarities across interview and focus group participants.

Surveys. CTAC reviews data from two distinct types of surveys: (1) CTAC develops and administers AdvanceSTEM surveys annually that seek feedback from TUSD educators, parents, and students about the implementation of this program. CTAC conducts thematic analyses on the written comments and Mann-Whitney U tests to examine the statistical significance of the differences across groups and years; and (2) CTAC reviews Professional Development (PD) Surveys on the quality, relevance, and usefulness of all PD sessions funded through the grant.

Teacher, Principal, and ILT Evaluation and Performance Data. CTAC reviews teacher and ILT member evaluation ratings across the key indicators embedded in TUSD's teacher evaluation rubric that aligns with the *California Standards for the Teaching Profession*. Additionally, CTAC examines teacher and ILT member performance based on data from the CIR instrument. CTAC reviews principal evaluation ratings across the key indicators embedded in TUSD's principal evaluation rubric that aligns with the *California Professional Standards for Educational Leaders*. Additionally, CTAC examines principal performance based on data from the Principal STEM Instructional Leadership instrument.

Financial Incentive Payout Data. CTAC reviews data related to performance-based compensation awarded to STEM teachers, STEM ILTs, and principals through TUSD's PBCS.

Human Resources Data. CTAC reviews data related to the quality and impact of new recruitment strategies in increasing the STEM teacher of color workforce. CTAC also examines data related to the quality and impact of the Aspiring Principals Leadership Academy in transitioning STEM teachers of color to school leadership positions.

Artifacts. CTAC reviews artifacts and data related to the implementation of AdvanceSTEM. These include, non-exhaustively, student design challenge solutions and computational artifacts; teacher prompts and student responses; PBCS performance targets and results; professional development resources; and instructional support materials.

Student Achievement Data. To assess the impact of AdvanceSTEM on student achievement, CTAC employs a quasi-experimental design to compare the 17 TUSD schools (treatment schools) to 68 schools in neighboring districts (comparison schools). CTAC's evaluation is eligible to meet What Works Clearinghouse (WWC) group design standards with reservations.

During Year 1 of AdvanceSTEM, CTAC uses CAASPP results as the baseline and finalizes the selection of the comparison schools for the 17 TUSD treatment schools. For each treatment school, CTAC uses propensity score matching techniques to identify four comparison schools that (1) are of the same grade configuration and (2) have similar baseline achievement levels and demographics and can satisfy WWC standards for baseline equivalence.

In Years 2 and 3, CTAC examines AdvanceSTEM's impacts (see Appendix F2) using a Comparative Interrupted Time-Series Design (CITS) approach (Bloom, 2003). Design replication studies have shown that CITS can perform well in replicating impact estimates from randomized controlled trials (Somers et al., 2013; St. Clair et al., 2014; Jacob et al., 2016).

The outcome data comprise grade-within-school-average achievement scores for each tested grade. These include grades 3–8 and 11 on CAASPP assessments for math; and grades 5, 8 and

high school on the CAASPP science test. They are obtained from TUSD and the state's website for the comparison schools outside of TUSD. The analyses are conducted at the aggregate level and are also disaggregated by subgroup (i.e., Black, Hispanic, and White students).

In Years 1, 2, and 3, CTAC will review the results of the assessments embedded within each of the 52 PreK-12 STEM units, and examine district math and science assessment data for changes in student achievement within TUSD over time.

Performance Feedback and Dissemination of Evaluation Learnings. CTAC's evaluation enables regular performance feedback and assessment of progress toward achieving the project's intended outcomes. On a quarterly basis, CTAC provides evaluative updates to the Leadership Council (see Section C. Management Plan), Project Co-Directors, and STEM Director. In each project year, CTAC produces a management report with interim analyses and findings in summer, and a formative evaluation report with complete analyses and findings to date in winter. At the end of the project, CTAC provides a summative evaluation report. *All formative and summative evaluation reports are made publicly available and presented to TUSD's Board of Education and the AdvanceSTEM Leadership Council*. The findings of the summative evaluation will also be shared broadly with the educational community (e.g., conference presentations, journal publications).

Part 2. Study of HCMS Professional Development. AdvanceSTEM's professional development is essential to the strategy for improving STEM instruction, instructional leadership, and student achievement. Therefore, AdvanceSTEM includes a comprehensive professional development study to determine the impact of the professional development. The study, conducted over the course of each of the project's three years, will inform and guide mid-course adjustments to the professional development services.

The study is based on a landmark process that CTAC introduced nationally (McRobbie et al., 2016; Slotnik et al., 2008). It examines the impact of the professional development on student

achievement, the impact on changed instructional practice, the impact on teachers', principals', and ILT members' perceptions of their pedagogy and instructional leadership and analyzes the costs and benefits of professional development expenditures.

The study serves several functions: (1) it provides a means to ensure *professional development is driven by content and leadership standards, and student achievement data*, (2) it provides both a baseline and a vehicle for *differentiating professional development* according to the needs of individual schools, (3) it enables TUSD to *evaluate quality, impact, and needed new directions*, and (4) it enables professional development to be analyzed in terms of its *relationship to student STEM achievement results, human resources needs, and financial allocations*.

The evaluation and the study rigorously assess and inform AdvanceSTEM's progress in achieving the intended outcomes of increasing educator instructional capacity and improving student STEM achievement.

C. Quality of the Management Plan

AdvanceSTEM provides the leadership and management to ensure fidelity and quality of implementation. Due to the importance of AdvanceSTEM to the future of TUSD, it has the active engagement of all key district decision-makers, and teacher and school management associations' leaders.

Figure 1. AdvanceSTEM Management Structure and Plan

The **Leadership Council** oversees the entire initiative, reviews formative and summative evaluations, ensures progress toward all project objectives, and makes adjustments to strengthen implementation. *Consisting of the highest-level decision-makers in the school system and the*

associations, the Leadership Council sends a clear message about the importance of this initiative. The Leadership Council is *empowered to cut through issues of turf or jurisdiction* so that AdvanceSTEM's impact is substantive and extensive. ***Members****:* Superintendent of Schools (chair), CTAC's Chief Executive Officer, Associate Superintendent for Educational Services, Associate Superintendent for Business Services, President of the Tracy Educators Association, and President of the Tracy School Management Association. The Project Co-Directors staff the Leadership Council and all other committees and the Principals Working Group.

The formative evaluation process, described in Section B.3 Evaluation, will propel the progress of AdvanceSTEM and assist the Leadership Council to make informed mid-course improvements.

The **Developing Talent Committee** guides the professional development for the participating STEM teachers, principals, and STEM ILT members. It also provides specific leadership counsel to the principals, STEM ILT members, and STEM Learning Accelerators (see below) in reviewing teacher progress in STEM content mastery, pedagogical practice, and student learning. The Developing Talent Committee establishes the STEM induction program for new STEM teachers. ***Members****:* Associate Superintendent for Educational Services (chair), Director of Professional Learning and Curriculum, Director of STEM Curriculum and Local Assessment, and Principal and Teacher representatives (K–6, 7–12).

The **Performance-Based Compensation Committee** guides the implementation of the PBC system at TUSD. It establishes PBC guidelines and examines all evidence submitted for rating and approval. It analyzes STEM teacher, principal, and ILT performance data from all 17 schools. It provides recommendations for payouts, and for addressing PBCS concerns and appeals, to the Leadership Council. ***Members****:* Associate Superintendent for Educational Services (co-chair), Associate Superintendent of Business Services (co-chair), Associate

Superintendent of Human Resources, President of the Tracy Educators Association, and President of the Tracy School Management Association.

The **Workforce Diversity Committee** guides the efforts to diversify the teacher and principal workforce at TUSD. It leads the Human Resources and Educational Services Departments to re-design TUSD systems and processes to recruit teachers of color and to create a pipeline to school leadership positions for teachers of color. The Workforce Diversity Committee develops connections with STEM Collaboratory professionals. ***Members****:* Associate Superintendent for Human Resources (chair), Associate Superintendent of Business Services, Director of Student Services, President of the Tracy Educators Association, President of the Tracy School Management Association, and Principal and Teacher Representatives.

AdvanceSTEM establishes a **Principals Working Group** to engage the 17 principals in real-time, problem-solving to strengthen the implementation of AdvanceSTEM. The Principals Working Group provides opportunities for meaningful networking. ***Members****:* Principals, Associate Superintendent of Educational Services, and Director of STEM and Local Assessment.

CTAC/TUSD Project Team

Under the executive direction of TUSD's Superintendent, [redacted], and CTAC's Chief Executive Officer, [redacted] (who conference bi-weekly), the quality of project services is assured by a highly skilled CTAC/TUSD Project Team. Resumes for the following key personnel are included in Appendix B:

Chief Executive Officer, CTAC ([redacted]*, FTE 0.25)*. He provides oversight of project design, implementation, and refinement. He has a proven track in strengthening educator instructional capacity with demonstrable increases in student achievement. He is a nationally recognized expert in advancing HCMS and PBCS.

Project Co-Director, CTAC ([redacted]***, FTE 0.50)***. He oversees the day-to-day operation of the project and ensures all objectives, milestones, and timelines are met. He directs and guides CTAC's professional and leadership development services to TUSD. His areas of expertise include STEM, HCMS, and financial modeling.

Coordinator, Leadership Development, CTAC ([redacted]***, Ed.D, FTE 0.35)***. She provides STEM instructional leadership training and coaching to principals, STEM Learning Accelerators, school faculties, and district leaders. Her expertise includes leadership development, data-driven instructional improvements, and PBCS.

Coordinator, HCMS, CTAC ([redacted]***, Ed.D, FTE 0.35)***. She provides HCMS management strategies and training for district leaders, principals, and school faculties. Her expertise includes human capital management for recruitment, hiring, preparation, and retention.

Coordinator, Instructional Development, CTAC ([redacted]***, FTE 0.75)***. He provides STEM instructional leadership training to teachers, principals, ILTs, and district leaders. His expertise includes leadership development and data-driven instructional improvements.

Coordinator, Evaluation, CTAC ([redacted]***, Ph.D., FTE 0.35)***. He manages the evaluation to gauge the fidelity of implementation and impact. His expertise is in the relationship of professional development to teacher practice, student achievement, and HCMS systems.

Senior Research Scientist, Evaluation, CTAC ([redacted]***, Ph.D., FTE 0.35)***. He utilizes both qualitative and quantitative methodologies and advanced statistical analyses to conduct the HCMS study. His expertise is in the area of program effect evaluation.

Director, Management Systems, CTAC ([redacted]***, FTE 0.20)***. She oversees all project financial and reporting functions. She leads the training of TUSD leaders on human resource practices. She has extensive experience providing fiscal oversight on TIF and TSL grants.

Superintendent of Schools, TUSD ([redacted]***, Ed.D., FTE 0.15)***. He oversees all

aspects of project implementation, including fiscal, instructional, and human resources; impact; and outcomes. He has 38 years of experience, including 31 years as a school administrator.

Project Co-Director, TUSD ([redacted]*, Ph.D., FTE 0.50)*. She oversees the day-to-day operation of the project and ensures all milestones and timelines are met. She is a nationally-recognized STEM educator and has seven years' experience directing STEM projects with oversight of over $5.5 million in multi-sector funding.

Associate Superintendent for Educational Services, TUSD ([redacted]*, FTE 0.25)*. She mobilizes instructional and professional learning staff in support of AdvanceSTEM. She is an expert in instructional leadership development and standards-based instruction.

Associate Superintendent for Business Services, TUSD ([redacted]*, Ed.D., FTE 0.20)*. He leads TUSD's budgeting, financial analysis, and long-term fiscal forecasts in support of AdvanceSTEM. He is an expert in financial systems and risk assessment.

Director of Professional Learning and Curriculum, TUSD ([redacted]*, FTE 0.25)*. She coordinates and supports PD with TUSD and CTAC experts. She directs project staff for all PD and teacher induction. Her expertise includes developing PD systems and instructional coaching.

***STEM Learning Accelerators, TUSD** (Two new project positions in TUSD, FTE 2.0)*. These two accelerators, one each for Elementary and Secondary, train and coach principals and ILTs. They develop instructional leaders and school faculties' delivery of effective STEM instruction.

Director of STEM and Local Assessment, TUSD ([redacted]*, FTE 0.30)*. He plans, organizes, and develops TUSD's PreK-12 STEM curricular programs. His areas of expertise are curriculum development, instructional practices, and assessment in STEM.

***K-12 Curriculum Specialists, TUSD** (Five specialists, FTE 0.30)*. They provide teachers and ILT members with professional development aligned to each high-need school's priorities for improving STEM instruction and achievement.

Responsibilities, Timelines, Milestones and Tasks

The Leadership Council, three committees, Principals Working Group, and the CTAC/TUSD project team are well-positioned to achieve AdvanceSTEM's objectives, meet major milestones, and accomplish project tasks on time. The Leadership Council establishes and ensures the quality of operational structures, grant and budget reporting and monitoring processes, and project communication and task tracking systems. Moreover, CTAC has extensive expertise and a 42-year track record in successfully managing, implementing, and evaluating large federally-funded projects on time and within budget.

At each Leadership Council meeting, the Project Co-Directors report on milestone and task completion and make recommendations for any needed project adjustments to achieve the objectives. The evaluators provide quarterly formative reports with recommendations to improve implementation. The active leadership of the chief executives of both CTAC and TUSD ensures swift and decisive actions in addressing needs.

Frequency of meeting schedules for all three years: Leadership Council (LeaderC) meets monthly, Developing Talent Committee (TalentC) meets monthly, Performance-Based Compensation Committee (PBC-C) meets quarterly, Workforce Diversity Committee (WorkforceC) meets monthly, and the Principals Working Group (PrincipalWG) meets monthly. Their efforts are supported by the CTAC/TUSD project team and TUSD instructional and professional learning experts (collectively referred to as CTAC/TUSD).

Table 12. Tasks, Responsibilities, Timelines

Task and Staff Responsible	Group	Timeline
Milestone 1: Develop Talent		
1.1 Use selection criteria to identify, vet, select and train STEM Learning Accelerators, K-12 STEM PD Specialists, and ILT members in coaching and adult learning strategies. Selection by *Associate Superintendent for Educational Services*, and Training by *STEM Director* and *Professional Learning Director*.	TalentC	Y1 Q1 Y2 Q1 Y3 Q1

Task and Staff Responsible	Group	Timeline
1.2 Develop teachers with high levels of STEM knowledge and instructional skill. Provide STEM training to teachers: district-provided training *quarterly* by *K-12 STEM Curriculum Specialists*; site-based training *twice monthly* by *principals, ILTs, K-12 STEM Curriculum Specialists* and *CTAC*. Individual teachers receive training and support *weekly* from their *school's principal/ILTs*.	TalentC CTAC/TUSD	Y1 Q1-4 Y2 Q1-4 Y3 Q1-4
1.3 New teachers receive *weekly* STEM induction support for two years. Training by *Professional Learning Department.*	TalentC CTAC/TUSD	Y1 Q1-4 Y2 Q1-4
1.4 All teachers and principals receive anti-bias training *three times yearly*. Training by *California Teachers Association Human Rights Department* with *TalentC members* in support.	TalentC	Y1 Q1 Y2 Q1 Y3 Q1
1.5 Develop principals who can provide STEM instructional leadership. Provide STEM training to principals: district-provided training *twice-monthly*. Individual principals receive training and support *weekly*. Training by *STEM Learning Accelerators, STEM Director,* and *Developing Talent Committee.*	TalentC CTAC/TUSD	Y1 Q1-4 Y2 Q1-4 Y3 Q1-4
1.6 Principals participate monthly in Principals Working Group. With counsel from *STEM Director, superintendent, associate superintendents,* and *CTAC*.	PrincipalWG CTAC/TUSD	Monthly Y1, Y2, & Y3
1.7 Develop a deep pool of instructional leadership capacity for STEM achievement. Provide STEM training to ILT members: training *quarterly district-wide* by *Professional Learning Department, national resource experts,* and *CTAC*. ILT members receive *monthly* training and coaching from *Professional Learning Department* and *STEM Learning Accelerators*. ILT members receive *weekly* coaching from *K-12 STEM Curriculum Specialists.*	TalentC CTAC/TUSD	Y1 Q1-4 Y2 Q1-4 Y3 Q1-4
1.8 Principals provide regular formative feedback to TalentC regarding training received and needs for teachers, principals, and ILT members that will further STEM implementation. *Principals* give formative feedback to improve implementation.	PrincipalWG TalentC	Y1 Q1-4 Y2 Q1-4 Y3 Q1-4
1.9 Review teacher and classroom observation data, principal and ILT teacher feedback, and training surveys to refine STEM training for teachers, principals, and ILTs. Conducted by *TalentC members.*	TalentC	Ongoing Y1, Y2 & Y3
Milestone 2: Align Incentives to STEM Priorities		
2.1 Communicate PBC incentives and planned growth targets to STEM teachers, principals, ILT members, TEA, TSMA. Communication by *Superintendent, Associate Superintendent of Education Services, Human Resources,* and *Business Services.*	LeaderC PBC-C CTAC/TUSD	Y1 Q2 Y2 Q1 Y3 Q1
2.2 Set PBC growth targets for STEM teachers, principals and ILT members. *PBCS Committee* provides recommendation and *LeaderC* approves final plan.	LeaderC PBC-C	Y1 Q2 Y2 Q1 Y3 Q1
2.3 Determine PBC, recommend payouts and refine PBC structure for next award cycle. *PBCS Committee* working with *principals* provides recommendations and *LeaderC* approves final plan.	LeaderC PBC-C	Y1 Q4 Y2 Q4 Y3 Q4

Task and Staff Responsible	Group	Timeline
Milestone 3: Build a Diverse Workforce		
3.1 Establish shared ownership between Human Resources and Educational Services Departments for recruiting and supporting teachers of color. Addressed by *Associate Superintendent of Educational Services* and *Human Resources* with annual review.	LeaderC WorkforceC	Y1 Q1 Y2 Q1 Y3 Q1
3.2 Set strategies and implement plan to recruit teachers of color and provide support during and after onboarding new teachers. Refine implementation plan each recruitment cycle based on recruitment data. *Associate Superintendents for Human Resources, Prudential Global Network (PNG HR),* and *Educational Services* approve plan, *Human Resources* implements the plan.	WorkforceC CTAC/TUSD	Y1 Q1,2,3 Y2 Q1,2,3 Y3 Q1,2,3
3.3 Human Resources and Educational Services Departments receive ongoing training and facilitation. Addressed by *TalentC* and *WorkforceC members*.	TalentC WorkforceC	Ongoing Y1, Y2 & Y3
3.4 Identified STEM teachers of color receive *monthly* training through the Aspiring Principals Leadership Academy designed by *DAVEd Group*. Training provided by *Educational Services Department*.	TalentC WorkforceC	Monthly Y1, Y2 & Y3
3.5 Connect with Collaboratory professionals to develop opportunities for STEM teachers of color to partner with practitioners in local STEM industries. *STEM Director* engages with *Collaboratory professionals*.	WorkforceC CTAC/TUSD	Y1 Q1-4 Y2 Q1-4 Y3 Q1-4
Milestone 4: Conduct Comprehensive Project Evaluation and HCMS Study on PD		
4.1 Conduct HCMS Study focusing on professional development and guide adjustments of PD offerings based on findings. Conducted by *Senior Research Scientist* and *Coordinator, Evaluation.*	CTAC	Y1 Q2-4 Y2 Q2-4 Y3 Q2-4
4.2 Provide quarterly formative reports and a management report with interim analyses for regular performance feedback and assessment for mid-course improvements. Conducted by *Senior Research Scientist* and *Coordinator, Evaluation.*	CTAC	Y1 Q1-4 Y2 Q1-4 Y3 Q1-4
4.3 Conduct a summative evaluation to assess progress toward achieving the impact of AdvanceSTEM. Conducted by *Senior Research Scientist* and *Coordinator, Evaluation.*	CTAC	Y3 Q3-4
4.4 Determine project impact on increasing the percentage of Black, Hispanic, and White students that meet or exceed the CA state average for proficiency in science and math. Determined by *Senior Research Scientist* and *Coordinator Evaluation.*	CTAC	Y1 Q4 Y2 Q4 Y3 Q4
4.5 Provide formative and summative evaluation reports to LeaderC and TUSD Board of Education. Provided by *Project Co-Directors, Senior Research Scientist* and *Coordinator Evaluation.*	CTAC	Y1 Q2 & 4 Y2 Q2 & 4 Y3 Q2 & 4
4.6 Study the effectiveness, fairness, quality, consistency, and reliability of the HCMS. Provide improvement recommendations. Study conducted by *Project Co-Directors, Senior Research Scientist* and *Coordinator Evaluation.*	CTAC	Y1 Q4 Y2 Q4 Y3 Q4

Task and Staff Responsible	Group	Timeline
Milestone 5: Maximize AdvanceSTEM's Impact and Plan for Sustainability		
5.1 Plan for long-term organizational sustainability by realigning district resources and practices and recasting priorities in support of PreK-12 STEM. By *Superintendent, Associate Superintendents of Educational Services, Human Resources and Business Services, Chief Executive Officer CTAC,* and *Project Co-Directors.*	LeaderC CTAC	Y1 Q4 Y2 Q4 Y3 Q4
5.2 Plan for long-term financial sustainability by creating a long-term staffing picture (human resources modeling) and predicting long-term costs and financial sources (financial modeling). By *Superintendent, Associate Superintendents of Educational Services, Human Resources and Business Services, Chief Executive Officer CTAC,* and *Project Co-Directors.*	LeaderC CTAC	Y1 Q4 Y2 Q4 Y3 Q4
5.3 Institutionalize the extensive base of support for AdvanceSTEM. Outreach to partners by *Superintendent, Associate Superintendents of Educational Services, Human Resources, and Business Services.*	LeaderC TEA, TSMA Collaboratory County DOE	Y1 Q4 Y2 Q4 Y3 Q4

D. Adequacy of Resources

D.1. Likelihood of System Change or Improvement

AdvanceSTEM markedly improves and expands TUSD's HCMS. It catalyzes changes in support of STEM learning and equity that are both systemic and sustainable. These include the professional development; compensation; and recruitment, induction, and leadership advancement systems.

Professional Development. AdvanceSTEM recasts the professional development system to focus capacity building on STEM learning. All professional development builds the capacities of teachers to engage diverse students, without bias, to use robust STEM knowledge and skills to solve real-world problems.

AdvanceSTEM ensures principals develop the expertise to inform, guide, and improve STEM instruction. Moreover, through the Principals Working Group, TUSD provides all principals with a structure for engaging in real-time, problem-solving to strengthen STEM learning.

AdvanceSTEM creates STEM ILTs, a new structure, to expand STEM instructional leadership capacity at each school. This is a new leadership role for teachers to improve STEM teaching and learning school-wide.

Compensation. AdvanceSTEM establishes a PBCS aligned to improving STEM instruction and increasing student achievement. This system change ties what educators earn, in part, to what students learn in STEM.

Recruitment, Induction, and Leadership Advancement. AdvanceSTEM fundamentally changes human resource systems in TUSD, beginning with implementing targeted *recruitment* strategies for STEM teachers of color. It changes recruitment efforts by recruiting earlier, partnering with California's network of Hispanic Serving Institutions, and providing professional growth opportunities for new teachers.

AdvanceSTEM implements STEM-specific *induction* for STEM teachers in their first two years in TUSD. This systemic change means that all incoming STEM teachers receive innovative, in-depth preparation in STEM content knowledge and instructional skills.

AdvanceSTEM provides *leadership advancement* opportunities for STEM teachers of color to transition into school administrator positions through an Aspiring Principals Leadership Academy.

Through AdvanceSTEM, the Human Resources and Educational Services Departments now align their expertise to expand workforce diversity and strengthen STEM teaching and leading in high-need schools. This structural coordination ensures recruitment, hiring, and promotion decisions are made through a STEM lens.

D.2. Local Capacity to Provide, Improve, or Expand Services

TUSD's comprehensive plan to increase equity of STEM learning opportunities and results for all students, particularly in high-need schools, depends on growing human and organizational capacities. AdvanceSTEM makes student access to effective STEM instruction the driving purpose across TUSD's schools and departments.

Human Capacities. The capacity building of STEM *teachers* improves their mastery of STEM content, ability to employ STEM instructional strategies, and their skills in fostering equity and inclusion in the classroom.

AdvanceSTEM builds *principal* capacity to identify highly effective STEM instruction, determine evidence of STEM student learning, lead the ILT, implement the TUSD teacher evaluation system with fidelity, and, in concert with the emphasis on rigor, relevance, and engagement in STEM instruction, advance the overall progress of teachers to improve student STEM achievement.

AdvanceSTEM develops *STEM ILTs* which broaden the school's capacity to coach and train STEM teachers to increase STEM instructional quality and achievement of all students at the school.

AdvanceSTEM's local capacity building results in increased delivery of high-quality STEM instruction for all students, student learning characterized by engagement, rigor, and relevance, participation of STEM professionals across grades and classrooms, and increased student achievement in STEM.

Organizational Capacities. AdvanceSTEM builds the capacity of the *compensation* system to align incentives to STEM priorities for the first time in TUSD. The PBCS recognizes and rewards the accomplishments of STEM teachers, principals, and ILT members in advancing STEM content mastery, instructional pedagogy, STEM instructional leadership, and student academic achievement in math and science.

The initiative increases TUSD capacity to diversify the STEM teacher and school leader workforce. It changes human resources *recruitment and induction* practices. Further, AdvanceSTEM strengthens TUSD's *leadership advancement* strategies by creating the Aspiring Principals Leadership Academy. These new organizational capacities increase the diversity of

new STEM teachers, provide effective STEM-focused induction, and ensure a pipeline for effective STEM teachers of color to transition to school leadership positions.

AdvanceSTEM also integrates the organizational capacity of two key elements of the human capital management system—human resources and educational services—to reinforce TUSD's STEM instructional and leadership priorities.

D.3. Resources to Operate the Project Beyond the Length of the Grant

TUSD is committed to ensuring the long-term impact and success of AdvanceSTEM. The continuation of AdvanceSTEM is assured by *planning for sustainability on the front-end of the initiative*. In particular, TUSD's operational and fiscal model is based on anticipating and addressing the requirements for organizational sustainability, financial sustainability, and building a broad base of support.

Organizational Sustainability. AdvanceSTEM strengthens district systems and practices, and builds the capacity of teachers, principals, and ILTs to provide robust STEM learning opportunities and increase student STEM achievement. These efforts are guided by the AdvanceSTEM management structure to ensure a unified plan of action and lay the foundation for organizational sustainability.

TUSD signals the importance of AdvanceSTEM by ensuring that the initiative has the same priority status in all key organizational departments—including curriculum and instruction, professional learning, assessment, human resources, and finance. In planning for organizational sustainability, AdvanceSTEM develops and reinforces clear linkages between these key departments and the schools. TUSD's system is better able to function systematically—and sustainably—on behalf of students and STEM educators at high-need schools.

Financial Sustainability. TUSD is dedicated to financially sustaining the systemic components of AdvanceSTEM to continue improving and expanding its HMCS.

TUSD has a demonstrated track record of successfully aligning resources in support of STEM education. As described in Section A.2, it has used diverse funding sources to create the foundation for AdvanceSTEM. As indicated in the project budget, it is contributing $7,671,190 in match funding for this initiative, demonstrating a significant commitment to the components of AdvanceSTEM.

Key district leaders—Superintendent, Associate Superintendent of Business, and Associate Superintendent of Educational Services—have already created a multi-year financial plan to sustain AdvanceSTEM. The project evaluation will be used to hone the financial plan. TUSD is deeply committed to recruiting, developing, and recognizing diverse, talented STEM educators. It will continue to fund project components shown to have a high impact on student STEM achievement, especially in high-need schools.

TUSD's is planning for financial sustainability by using human resources modeling and financial modeling—a distinct departure from current practice in most districts. The human resource modeling enables TUSD to create a long-term staffing picture. The financial modeling enables TUSD to predict long-term costs. These are key elements of the sustainability plan.

Table 13. Projected Three Year Budget to Sustain AdvanceSTEM's Core Components

Categories	Projected Financial Needs 2024-25 to 2026-27 (up to)	Projected Funding Sources
STEM professional development	$1,155,000	Title II ESSA
ILTs in 17 schools	$510,000	Local Control Accountability Plan
Diverse STEM teacher recruitment	$90,000	District General Fund
STEM teacher induction	$300,000	District General Fund
STEM curriculum revision	$210,000	Local Control Accountability Plan
STEM assessments	$210,000	Local Control Accountability Plan
Aspiring Principals Leadership Academy	$225,000	District General Fund
Office of TUSD STEM Director	$1,050,000	District General Fund
Total	$3,750,000	Local (DGF), State (LCAP), Federal (Title II ESSA)

AdvanceSTEM is using TSL funding to institutionalize different ways of conducting business in TUSD and to build on strategies proven successful. Just as TUSD established the building blocks for AdvanceSTEM by leveraging multiple funding sources (described in Section A), it is taking the same approach to sustain the initiative beyond the length of the grant.

Building a Broad Base of Support. The base of support for this initiative, and for the sustainability plan, is both extensive and exemplary (see Appendix C for support letters). The leaders of the district, Tracy Educators Association, and Tracy School Management Association all support AdvanceSTEM. In partnership with the Community Collaboratory, the initiative has the active support of the 20 leading STEM-related employers from Tracy's private and public sectors. TUSD is also partnering with the San Joaquin County Office of Education to develop additional STEM curriculum and assessments. AdvanceSTEM builds on these exceptional relationships to ensure the project's long-term success.

Conclusion

AdvanceSTEM addresses the two absolute priorities and two competitive preference priorities. Below is a summary description of how they are embedded in the proposal.

Absolute Priority 1: HCMS or PBCS. AdvanceSTEM focuses fully on improving and expanding TUSD's Human Capital Management System. It explicitly links STEM instructional improvement and instructional leadership effectiveness to student STEM achievement. AdvanceSTEM provides differentiated, targeted professional development to increase STEM instructional effectiveness. AdvanceSTEM establishes a PBCS which recognizes and rewards effective STEM instruction, leadership and students' STEM achievement.

Absolute Priority 2: High-Need Schools. AdvanceSTEM builds the capacity of teachers, principals, and ILTs at all thirteen high-need schools in TUSD. These high-need schools, where 51% to 80% of students are on free or reduced-price lunch, are the focus of AdvanceSTEM.

Competitive Preference Priority 1: Supporting Educators and Their Professional Growth. AdvanceSTEM builds the STEM content knowledge, instructional skills, and instructional leadership of teachers, principals, and STEM ILTs. It establishes STEM ILTs for the first time in the district, providing expanded instructional leadership. It supports high-need schools in developing effective, diverse educators. It provides training on meeting the needs of diverse learners through STEM.

Competitive Preference Priority 2: Increasing Educator Diversity. AdvanceSTEM increases educator diversity by implementing key strategies to recruit STEM teachers of color to high-need schools. It also creates an Aspiring Principals Leadership Academy to transition effective STEM teachers of color into school leadership positions. AdvanceSTEM provides anti-bias training to all teachers and principals.