Attachment 1:
Appendix II-6 MSAP Grant Narrative

INTRODUCTION

For more than 33 years, Tucson Unified School District (TUSD) has implemented innovative magnet programs that serve as the cornerstone of the District's integration plan. Tucson Unified has been under court supervision with regard to desegregation. During the 1970's, when the majority of magnet schools were developed, the placement and program considerations were made for the purposes of equity for minority (non-white) populations, not for the purposes of integration.

In 2004, Tucson Unified moved for termination of the Fisher-Mendoza Consent Decree, asserting that the district had eliminated the vestiges of past discrimination to the extent possible. The plaintiffs opposed the motion. After extensive amounts of submissions by the parties in 2007, the District Court declared Tucson Unified "unitary" and returned school supervision to state and local control. The court concluded that the district had not acted in good faith, and it also found that it could not make the requisite findings as to whether Tucson Unified had eliminated the vestiges of discrimination to the extent possible. The plaintiffs appealed to the Ninth Circuit Court of Appeals. The superintendent at the time put together a committee to develop a Post Unitary Status Plan for the district. The final version of the plan was adopted by the Governing Board on July 30, 2009. In the Post Unitary Status Plan, a proposal for race-neutral student assignment was outlined and put into practice as a pilot for the 2009 and 2010 school years. A permanent plan for student assignment would then be developed for board approval. On July 19, 2011, the Ninth Circuit Court of Appeals in San Francisco held that the decision in the Federal District Court in Tucson was incorrect in 2007 when it granted the school district "unitary" or non-segregated status and, in doing so, ended the 33-year court oversight of the case. The Ninth Circuit Court of Appeals remanded the case back to the District Court to

maintain jurisdiction until it is satisfied that the school district has met its burden by demonstrating good faith compliance with the 1978 Desegregation Consent Decree. On September 19, 2011, the District Court in Arizona ordered that a special master be appointed in the case. The special master was charged with the responsibility of developing a district plan that would meet the intent of the plaintiffs for fair and equitable programs and learning opportunities for all students, and to integrate the diverse populations of the district. The Unitary Status Plan was accepted by the courts in January 2013.

The magnet schools in this proposal will offer a challenging, meaningful curriculum that is accessible to students of all ethnicities, backgrounds, and ability levels. Along with curriculum, innovative instructional strategies will be implemented to accommodate a variety of learning styles with active student engagement at the heart of every lesson. By implementing these strategies, there will be a reduction of achievement disparities between minority students and those students who have been underserved; girls in math, science, and technology courses; students with exceptional education needs and disabilities; and English language learners. Girls and other underrepresented populations will be actively recruited to participate in the STEM pipeline and technology coursework. High quality, exciting activities will be created to increase student interaction opportunities. Student accomplishments from underrepresented populations will be highlighted. By creating clubs, competitions, and showcases for these populations, students of underrepresented populations will gain more confidence and experience in relating to other students. In turn, all students will have broadened perspectives and raised expectations for themselves and their peers. Student progress will be monitored to utilize strategies and specialized instructional pedagogy to address student needs. All students will have multiple

opportunities for interaction with peers from different backgrounds to understand the strengths each brings from cultural and personal experiences.

TUCSON UNIFIED SCHOOL DISTRICT DESEGREGATION PLAN

(1) The effectiveness of its plan to recruit students from different social, economic, ethnic, and racial backgrounds into the magnet schools. (34 CFR 280.31).

In 2013, Tucson Unified School District (TUSD) entered into a desegregation consent decree, the Unitary Status Plan (USP). The primary USP student recruitment focus is to recruit students of racially and ethnically diverse backgrounds. Where feasible, the District also considers socioeconomic and geographical diversity in implementing its recruitment strategies. Pursuant to the USP, the District has developed and is currently implementing several action plans and related activities as part of a coordinated student assignment effort designed to enhance integration by recruiting students from different social, economic, ethnic, and racial backgrounds into its magnet schools, including total-school magnets at Borton Magnet Elementary School (Systems Thinking/Project-based Learning), Mansfeld STEM Middle Magnet School, Tucson High Magnet School (Natural Science), and Palo Verde High Magnet School (STEAM). Over the past four years, all four schools have been successful in recruiting students of diverse backgrounds. Into the future, these schools will continue building on the initial success of the strategies described below and evaluating their impact to make necessary adjustments.

The District's director of Student Assignment coordinates a cross-departmental Coordinated Student Assignment committee ("CSA") made up of representatives from the following departments: School Community Services; Planning and Operations; Magnet; Legal/Desegregation; Transportation; Communications/Media Relations; and Accountability and Evaluation. The CSA is routinely advised by other departments as needed. On an ongoing basis,

the CSA analyzes potential strategies to improve integration in magnet and non-magnet schools, makes proposals to district leadership, and—if approved—coordinates implementation to ensure success.

The District's coordinated student assignment process includes several strategies designed to recruit students from diverse backgrounds into its magnet schools. The process begins with data analysis to identify enrollment and demographic trends, followed by targeted marketing and recruitment to develop a pool of interested students whose enrollment would enhance diversity. Through its application and selection process, the District applies a "lottery"— an application and selection process for oversubscribed schools and programs—to place students in a manner that promotes racial/ethnic integration and reduces racial/ethnic concentration. Free transportation is provided to all magnet students to remove geographical barriers, which are often a proxy for socioeconomics. The District's Comprehensive Magnet Plan (CMP) guides efforts to improve integration and academic achievement. Two pillars—racial/ethnic integration and academic quality—drive the CMP, thereby increasing the attractiveness of the magnet school or program for the next recruitment cycle.

A. Data Analysis

Magnet schools engage in an ongoing process of data analysis to measure progress toward the integration goals defined in the USP.[1] The process begins by collecting each school's 40th day enrollment data, compiled in October, and the District's priority enrollment period begins in November each year. School administrators work with site-based magnet coordinators

[1] Pursuant to the USP, the "student assignment goal for all magnet schools and programs shall be to achieve the definition of an integrated school…" (USP, p. 6). The USP definition of an integrated school is one in which "no racial or ethnic group varies from the district average for that grade level (Elementary School, Middle School, K-8, High School) by more than +/- 15 percentage points, and in which no single racial or ethnic group exceeds 70% of the school's enrollment" (USP, p. 9).

and the TUSD Magnet Department to analyze the data for all grades but focus primarily on data for incoming entry-level grades (Kindergarten, 6th, and 9th). Ongoing analysis occurs at the 100th day and also after each lottery to gauge the impact of recruitment efforts and to make any necessary adjustments so that each magnet school meets its integration goals.

B. Marketing, Outreach, and Recruitment (MORe) Plan

The District's MORe plan outlines strategies for recruiting and marketing to students and provides information to African American and Latino families and communities about the educational options available in the District, particularly for its magnet schools. The District designed its recruitment strategies to attract students from TUSD schools, charter schools, or schools in other districts, as Arizona is an open-enrollment state. While recruitment efforts should reach all families residing in and near the District boundaries, strategies are specifically targeted to traditionally underserved African American and Latino students and families. Targeted marketing and recruitment utilizes three interrelated tiers: central marketing and branding led by the Communications and Student Services departments; magnet-specific marketing, outreach, and recruitment from the Magnet Department; and site-specific outreach and recruitment from each magnet school.

During the 2016-17 school year, the District is modifying its marketing and outreach efforts to highlight the benefits of integrated learning environments. The District will also operate an "Enrollment Bus" that will travel throughout the city to provide families with greater access to information about school choices, including magnet schools. Staff on the bus also will help families determine eligibility for free transportation and apply to schools of their choice. The bus features wrap-around marketing information, mobile laptops with internet access, and a dedicated staff member trained in student recruitment and family outreach.

The District operates four geographically diverse family support centers and a centrally-located family information center to provide parents with school choice information and to accept magnet/open enrollment applications. The District dedicates an entire department—School Community Services (SCS)—to providing parents with information and assisting families in making school choice decisions. District staff members are trained to provide information to parents and students about educational options and opportunities in the District, including magnet themes, programs, transportation, and the selection process. Parents may enroll in multiple schools on a single magnet/open enrollment application, listing their choices in rank order. The District then utilizes its application and selection process to provide families with their first choice, if possible.

C. Application and Selection Process

The District applies a lottery when seats are available after all neighborhood students have enrolled and when there are more applications than available seats (by grade level). Although the lottery applies to varying grade levels, its primary impact is at entry grades (Kindergarten, 6th, and 9th), when substantial numbers of students enroll into a new school. Over the past few years, the lottery has improved integration by successfully placing students recruited from different ethnic/racial backgrounds into the four subject magnet schools, particularly Borton, Mansfeld, and Tucson High. Palo Verde is an integrated school due to the demographics of the neighborhood it serves, its central location, and District efforts to increase enrollment and provide free transportation. Because Palo Verde already an integrated school and currently not an oversubscribed school, the magnet placements operate to maintain that composition.

Table 1. Borton Magnet Elementary School – Neighborhood versus Magnet Seats

Borton Magnet Elementary School				
	Non-Neighborhood Kinder Seats (Magnet, filled by Lottery)		**Neighborhood Kinder Seats**	
	Anglo	**Hispanic**	**Anglo**	**Hispanic**
2014	49%	38%	0%	86%
2015	42%	46%	5%	79%

Borton is an integrated school due to the effects of lottery placements. The placements shown above (Table 1) for the entry grade (Kindergarten) mirror the overall composition of the students from within and from outside the attendance area of the school. The lottery has consistently improved integration and reduced racial isolation at Borton.

Table 2. Mansfeld STEM Middle Magnet School – Neighborhood versus Magnet Seats

Mansfeld STEM Middle Magnet School				
	Non-Neighborhood 6th Grade Seats (Magnet, filled by Lottery)		**Neighborhood 6th Grade Seats**	
	Anglo	**Hispanic**	**Anglo**	**Hispanic**
2014	20%	75%	13%	75%
2015	20%	61%	12%	74%

With a current composition of 73 percent Hispanic students, Mansfeld is a racially concentrated school under the USP. Prior to becoming a magnet school in 2013, however, Mansfeld's Hispanic population was 78 percent. In that year, the racial/ethnic composition of non-neighborhood students was virtually the same as that of neighborhood students. In the 2014

lottery, the District placed almost all Anglo applicants, but because relatively few of them had applied, the process did not improve integration. In 2015, the District improved outreach and recruitment efforts and increased the number of Anglo applicants. Through lottery placement, the increased pool of non-Hispanic students helped to greatly reduce racial isolation and improve integration for the 2015-16 school year (Table 2).

Table 3. Tucson High Magnet School – Neighborhood versus Magnet Seats

Tucson High Magnet School				
	Non-Neighborhood 9th Grade Seats (Open, Science, and Art Magnet, Filled by Lottery)		**Neighborhood 9th Grade Seats**	
	Anglo	**Hispanic**	**Anglo**	**Hispanic**
2014	12%	74%	16%	71%
2015	20%	65%	14%	71%

Tucson High is racially concentrated—neighborhood students are 76 percent Hispanic. Magnet placements have successfully reduced the overall student composition to 73 percent Hispanic. In 2013, the racial/ethnic composition of non-neighborhood students was virtually the same as that of neighborhood students. In 2014, the lottery did not improve integration; the composition of placements was again very similar to the composition of neighborhood students at the school (Table 3). In 2015, the composition of the lottery placements (475 in just the 9th grade) was integrated and very closely matched the District averages, thereby bringing the overall school closer to an integrated composition.

Notes on the tables:

- *The tables reference data on Anglo and Hispanic students who constitute the largest racial/ethnic groups in the District and therefore have the greatest impact on integration. The 2013 data is for all grades at the school and is derived by address-matching 2013-14 school year students to distinguish neighborhood from non-neighborhood students.*
- *The 2014 data shows the impact of the lottery held during the 2013-14 school year on the entry grade for that school in the 2014-15 school year. Entry grades are shown because placements in other grades are relatively small and have little overall impact.*
- *The 2015 data shows the impact of the lottery held during the 2014-15 school year on the entry grades in the 2015-16 school year.*

D. Transportation

The District offers free transportation to all students enrolled in magnet schools or programs to reduce geographic and socioeconomic barriers to enrollment. The District provides transportation through yellow buses and, where feasible, through a joint-venture with the city's bus system, Sun Tran, to provide bus passes for older students.

E. Comprehensive Magnet Plan

Pursuant to the USP and related court orders, the District's CMP focuses on two primary pillars: racial/ethnic integration and academic quality. The CMP states, in part: "[t]he goal of magnet schools by definition is to attract a racially diverse student body by creating schools so unique and appealing that it will draw a diverse range of students from across the district. In successful magnet schools, the student and staff population is diverse and academic achievement is higher than non-magnet schools." Implementation of the CMP is vital to strengthening

academic achievement in magnet schools, improving integration, and increasing the attractiveness of magnet schools for families and students.

(2) How it will foster interaction among students of different social, economic, ethnic, and racial backgrounds in classroom activities, extracurricular activities, or other activities in the magnet schools (or, if appropriate, in the schools in which the magnet school programs operate). (34 CFR 280.31)

The District recruits students of diverse backgrounds to ensure that both classroom and extracurricular activities provide opportunities for interracial contact in positive settings of shared interest. In part, the District accomplishes this by integrating magnet students and neighborhood students in all Kindergarten through 8th grade classes and in the majority of classes at the high school level. At the high school level, teachers participate in horizontal and vertical professional learning communities (PLCs), in part to share strategies and best practices that differentiate and engage all students in the learning process. In Tucson Unified, teaching and learning is designed to provide individualized educational experiences for all students, to engage every learner, and to encourage peer-to-peer collaboration. Tucson Unified supports these efforts with professional development for all teachers and holds them accountable for utilizing their training. The District expects all teachers to use culturally responsive pedagogy (CRP) in their classroom teaching, to promote classroom management strategies such as positive behavioral interventions and supports (PBIS) and restorative practices, and to build and sustain supportive and inclusive school environments. In maintaining supportive and inclusive learning environments, the District is committed to highlighting the historic and ongoing contributions of diverse groups and ensuring that students remain as often as practicable in the classroom settings in which learning happens.

Creating a positive culture and climate is critical to fostering interaction among students; students must feel safe and confident in participating and collaborating with their peers without judgment, disruption, or exclusion. The District communicates to teachers their roles and responsibilities in creating and supporting inclusive classrooms through strong relationships with students that foster positive classroom interactions. These responsibilities include, but are not limited to, providing specific feedback to students for low-level behaviors; applying appropriate interventions to defer a student's removal from the learning environment; participating in trainings to build and sustain a positive school climate; utilizing data in collaboration with relevant personnel to enhance student behavior outcomes; and responding accordingly to data outcomes, celebrating successes and addressing challenges.

In magnet classes, programs, and extracurricular activities, magnet and neighborhood students are well integrated to provide multiple opportunities for interracial contact. Magnet theme-related clubs and groups exist to promote interaction and, in many cases, to introduce non-magnet students to magnet themes and expanded opportunities. Magnet and non-magnet students share lunch times, elective classes, social activities, and extracurricular activities to ensure that each student has the maximum opportunity for interracial contact both within and beyond the magnet program itself.

(3) How it will ensure equal access and treatment for eligible project participants who have been traditionally underrepresented in courses or activities offered as part of the magnet school, *e.g.*, women and girls in mathematics, science, or technology courses, and disabled students. (34 CFR 280.31)

Tucson Unified seeks to ensure equal access and treatment of traditionally underserved students on two levels: ensuring equal access to the magnet programs and schools and ensuring equal access to specific courses or activities offered as part of the magnet school.

A. Equal Access to Magnet Schools and Programs

In the 1980s, Tucson Unified initiated several of its magnet schools specifically to provide access to equitable programs in areas of high Latino student concentration in conjunction with the U.S. Department of Education's Office for Civil Rights (OCR). In 2013-14, as the District initiated its consent decree, the USP, it began to develop an application and selection process for oversubscribed schools, a CMP, and marketing strategies to further integrate its magnet schools and programs. The new objective (integration) was to some degree at odds with the previous objective (equal access). Oversubscribed magnet schools with large Hispanic student populations such as Borton, Mansfeld, and Tucson High lacked excess capacity to accept additional students. The District developed its application and selection process, the lottery, to set aside a certain number of neighborhood seats and thus ensure that neighborhood students, who are predominantly Latino, would still have access to quality magnet programming at these sites. While it was possible to fill all or most of the non-neighborhood seats with non-Latino students to accelerate integration, the District was mindful that doing so would effectively exclude many Latino students from outside the magnet neighborhoods from participating. To ensure equal access to oversubscribed magnet schools, the District designed the lottery to place a significant number of non-Latino students into racially concentrated magnet schools, while providing a fair opportunity for the placement of significant numbers of non-neighborhood Latino students.

Beyond efforts to ensure equal access to popular programs at oversubscribed magnet schools, the District's recruiting and implementation efforts are aimed at removing barriers to access for magnet programs. As described above, free transportation makes it possible for students who are geographically distant from magnet schools to enroll and attend. The District's pilot program for express shuttles in the 2016-17 school year will reduce travel times to magnet schools by approximately 50 percent and promises to increase access to an even greater extent for students outside of a magnet's neighborhood boundary. The District's outreach and recruitment plan also is designed to improve access by providing information to families on magnet and transportation options; actively seeking interested parents at community events and in their neighborhoods; making applications available online and accessible through the Enrollment Bus and at all school sites; operating three geographically diverse family centers and a centrally-located family information center; and utilizing traditional and social media to ensure that parents are aware of the exciting magnet options within the District.

B. Equal Access to Courses or Activities Offered as Part of the Magnet School or Program

Borton and Mansfeld are total-school magnets in which all students participate in magnet courses and activities. Palo Verde and Tucson High schools operate magnet programs. All four schools serve majority-minority populations of traditionally underrepresented students. Minority populations for the 2015-16 school year are as follows: Borton (78 percent); Mansfeld (89 percent); Palo Verde (75 percent); and Tucson High (88 percent). At the District level and pursuant to its desegregation efforts, Tucson Unified pays particular attention to its traditionally underserved African American and Latino students at these sites but also operates student services departments for Native American, Asian/Pacific Islander, and refugee students, each of

which are staffed and designed to address specific equity-of-access issues unique to the student populations they serve. At the site level, each magnet school strives to actively provide equal access to magnet-related courses and activities for all students as described below. As a result, many of the magnet-related courses and activities are highly diversified with students of different races/ethnicities, socioeconomic levels, language abilities, physical and/or mental abilities, and refugee status.

1. Borton Magnet Elementary School (Systems Thinking/Project-based Learning)

All students at Borton participate in project-based learning and are encouraged to get involved in various extracurricular activities. All classrooms at Borton develop multiple in-depth projects every year. Teachers develop classroom projects by driving questions of interest to the students or by asking students to identify problems or issues within their school or community. These interdisciplinary, integrated curriculum studies, by their very nature, provide students multiple ways to access learning and express their new understandings while considering the multiplicity of perspectives brought by all students. Within this curricular design, all students, including exceptional education students and English language learners, can learn from a position of confidence, tailored to their individual strengths. For example, while some students might contribute in-depth research represented through a text-based platform, vulnerable readers might use some type of assistive technology to access information and then contribute to the project through art or music.

All Borton students learn and work in the school's community garden and the 2½-acre natural habitat, the Borton Environmental Learning Lab (BELL). In the 2015-16 school year, every student in every class worked on a GIS project with support from Westland Resources, an engineering and environmental consulting firm partnering with the school. Additionally, the 21st

Century Community Learning Center (CCLC) provides additional opportunities for all students to engage in more learning related to STEM, the arts, and even sports. Borton also embeds systems thinking as a pedagogy, a way to help students think deeply about their observations and express them visually. In the Systems Thinking in the Schools Project, a five-year, collaborative, action-research study by the Waters Foundation, researchers found that even the most vulnerable students were motivated and engaged by this approach and better able to organize and express their thinking. By making sure that all Borton classrooms are balanced for gender, ethnicity, language, and special needs, the school can assure that these enriching paths to learning are available to all students.

2. Mansfeld STEM Magnet Middle School

Over the last few years, Mansfeld has been annually increasing student access to Advanced Learning Experiences (ALEs)[2], specifically to increase the participation of traditionally underserved students. As a result of prior and ongoing efforts, Mansfeld students have access to a far greater range of ALEs than most schools in Tucson Unified or surrounding districts at the middle school level. Approximately 75 percent of Mansfeld's core-subject (English, math, science, and social studies) teachers have earned Gifted and Talented Education (GATE) endorsements through additional study and/or training and have attended pre-AP trainings from the Phoenix Summer Institute. As a result, Mansfeld has opened additional sections for both GATE and pre-AP courses in core classes. At the 8th grade level, advanced courses included five sections of high school credit courses that facilitate opportunities for students to participate in AP and college-level courses once they get to high school. In the 2016-17 school year, Mansfeld will offer 33 sections of advanced learning opportunities in a FLEX

[2] ALEs include opportunities like pre-AP courses (honors, advanced, etc.), GATE courses, and middle school courses for high school credit.

format[3], allowing students to take from one to four advanced courses each year, depending upon their interests. That number is expected to increase to 37 in the 2017-18 school year. These FLEX courses allow Mansfeld staff, who recently began tracking enrollment, to identify and target students with academic aptitude for enrollment in advanced coursework. As students experience success, they are encouraged to challenge themselves and expand their enrollment into advanced courses.

Mansfeld also has worked to ensure that all students, including minority and exceptional education students, have access to and participate in STEM-related extracurricular opportunities. These opportunities include partnerships with the Arizona Trail Association and the University of Arizona's Sky School. The Arizona Trail Association allows Mansfeld to partner 7th grade students who already experience academic success in science with students who are on the cusp of being successful. This peer-to-peer pairing increases mutual understanding of diversity while encouraging academic success for all students involved. The Sky School partnership allows up to 40 students to attend an overnight field research experience guided by graduate students at the University of Arizona (UA). Working so closely in small groups in a functional research facility with college-aged scientists provides opportunities to "try on" science in a safe but rigorous setting. Mansfeld actively encourages all students to apply to these opportunities and uses a weighed rubric to ensure that students who would most benefit from these programs, including traditionally underserved students, are provided with opportunities to participate.

Mansfeld's student success specialists from the African American and Native American services departments play a huge role in providing additional encouragement to minority

[3] Some middle schools implement a student "house" system where cohorts of students share schedules. In the house model, students take ALE courses as a set, meaning each student in the cohort take honors, GATE, or pre-AP courses for all core areas. Under the FLEX model, Mansfeld students have the flexibility to enroll in any number of ALE courses.

students to apply for these opportunities and communicate regularly with the magnet coordinator to ensure equal access to all programming. The African American Student Services Department also runs a summer STEM camp that recruits students from Mansfeld, giving them additional opportunity to work with STEM professionals and engineers from the community.

Finally, Mansfeld makes a concerted effort to recruit female and minority STEM specialists to serve as keynote speakers for its quarterly family STEM Nights so that all students can identify with a role model. In addition, students and their families participate in one of multiple breakout sessions that are designed to showcase formal and informal science as well as lifelong learning. In this manner, students become the school's ambassadors and in many cases its most effective recruiters for future magnet students.

3. Palo Verde Magnet High School

Palo Verde seeks to provide equal access to traditionally underserved students in several activities, course offerings, and programs. Palo Verde operates the Advancement Via Individual Determination (AVID) program, which "trains educators to use proven practices in order to prepare students for success in high school, college, and a career, especially students traditionally underrepresented in higher education." Palo Verde also operates multiple magnet-related and award-winning clubs whose sponsors actively promote inclusion and diversity within their membership. These include but are not limited to the Robotics Club, Club Congress (Wetlands), and the Yes (Youth Empowerment for Success) club. The Robotics Club is an extension to concepts and fundamentals learned in the engineering, physics, art, and math classes. Students are encouraged to use their critical thinking and innovative skills when the club meets to apply what they learn throughout the day. Club Congress uses the wetlands area of the campus, with an emphasis on understanding science applications they are learning in the classroom. The

greenhouses and gardening areas also provide an opportunity for community building with local businesses. The YES club is a mentoring program that assists all students with improving decision-making and problem-solving skills.

Palo Verde enlists several recruiting opportunities to ensure equal access for traditionally underserved students, including female, minority, exceptional education, and English Language Learners students. Staff members and sponsors place posters and flyers throughout the campus and share information though social media and newsletters that are sent home with student report cards. Throughout the school year, staff members and students make announcements over the intercom regarding sign-up procedures. During Open House and 21st Century Showcase events, tables and displays are set up to recruit interested students. The coordinators of the after-school 21st CCLC program go class to class sharing information about the club offerings. Palo Verde operates an open-door policy for all clubs; any student may attend the club at any point during the year and there are no fees or qualifications to enroll. This allows for greater access and diversity, as students' interests and availability often fluctuates. The students within each club reflect the diverse school population that Palo Verde successfully achieves.

4. Tucson High Magnet School

Tucson High seeks to provide equal access to traditionally underserved students in several activities, course offerings, and programs. Tucson High is unique in that it operates two magnets: natural science and fine arts. Both programs are extremely popular and routinely oversubscribed. In relation to the natural science magnet, student support personnel/services are used to check grades, assign tutoring, contact parents, and monitor grades. Tucson High also uses many modes of communication to ensure that parents are kept informed, including its website, Parent Link, emails, Making the Grade, Parent Night/open houses, and the marquee. The

school's science department has many programs designed to support its students. Tucson High offers a Basic Local Alignment Search Tool (BLAST) program, a Math Engineering Science Achievement (MESA) program, and the Southern Arizona Regional Science and Engineering Fair. The school also partners with Inner City Outings, a program that promotes hiking and outdoor exploration for traditionally underserved urban youth, and the UA's Sky School. It is Tucson High policy to permit students to self-select courses in any area, resulting in highly diverse classes and increasing the participation of traditionally underserved students in magnet-related courses and ALEs. Tucson High follows up by providing educational support during student-teacher conference periods twice a week so that students not only enroll but are also successful in these courses.

Tucson High offers a variety of fine and performing arts classes that appeal to a wide range of students, including mariachi, folklorico, steel drums, theater, choir, band, orchestra, visual art, film, photography, graphic design, and commercial art. These classes are open to all students. The school also operates cross-curricular professional learning communities and train teachers on culturally responsive pedagogy to enhance student engagement and teacher-student interaction in its magnet programs.

Tucson High staff members work intentionally to increase minority participation in ALEs. Tucson High offers an AP Summer Bootcamp for all AP students, but targets students who are traditionally underrepresented in AP courses, particularly those who are about to take an AP or other advanced course for the first time. This two-week summer camp teaches study and writing skills necessary to be successful in an AP or other advanced class. Tucson High also funds an AP mentor who monitors targeted students, offers weekly support classes for students to ensure retention and success once enrolled, and provides weekly tutoring in all subject areas.

Teachers use PLCs and professional development specifically designed to meet the needs of all students and build knowledge, skills, and effective teaching that is culturally sensitive and relevant.

(4) The effectiveness of all other desegregation strategies proposed by the applicant for the elimination, reduction, or prevention of minority group isolation in elementary schools and secondary schools with substantial proportions of minority students. (Section 5301(b)(1) of the ESEA).

The District's Comprehensive Magnet Plan (CMP), which includes individualized site plans, is directed at improving integration and reducing racial isolation at Tucson Unified magnet schools and programs through a variety of strategies, including targeted marketing and recruitment, a lottery process for oversubscribed schools, free transportation into magnet schools and out of racially concentrated boundaries, community outreach, express shuttles, and specific annual goals for each site to improve integration and reduce racial isolation. In implementing the CMP and through other related measures, the District engages several desegregation strategies for eliminating, reducing, or preventing minority group isolation at schools with substantial proportions of minority students.

Each magnet site is required to develop an annual site plan aimed at improving academic achievement and improving integration while reducing minority student isolation. By improving academic achievement, magnet schools strive to become more attractive to non-neighborhood students whose enrollment often reduce racial isolation and improve integration. Many of the recruitment and outreach efforts are targeted toward zip codes and neighborhoods with demographics that do not match the magnet school, thereby increasing the likelihood of a diverse pool of applicants to help integrate the site. Students applying to schools such as Borton,

Mansfeld, and Tucson High would be well over 75 to 80 percent Hispanic were it not for the lottery process, which balances heavily-Hispanic neighborhood populations with a more diverse pool of non-neighborhood students. Through the lottery, the District places entry-grade students in a manner that reduces the percentage of Latino students at each school, improving integration and reducing racial isolation.

The District also utilizes both magnet and incentive transportation to increase opportunities for students to attend an integrated school. All students enrolled in magnet schools or programs are eligible to receive free transportation. As most magnet schools are concentrated in the center and west of the District in schools that are heavily Latino, magnet transportation improves the integration of schools that would otherwise have very high percentages of Latino isolation. At the same time, free incentive transportation is available to any student living within the boundary of a racially concentrated school (those with Latino populations over 70 percent) whose enrollment will improve integration at the chosen receiving school, thus "incentivizing" parents to consider choices outside of the racially concentrated school boundary.

In the 2016-17 school year, the District is piloting an express shuttle program to further enhance the impact of magnet and incentive transportation. The express shuttles will provide students ride times that nearly halve the time of current commutes. The District will operate an east-to-west express shuttle aimed at encouraging a more diverse pool of students to enroll at Drachman Magnet School to improve integration and reduce racial isolation. Similarly, Tucson Unified will operate two west-to-east express shuttles aimed at encouraging neighborhood students in the Tucson High and Mansfeld areas to leave their racially concentrated boundary to enroll at Magee Middle School or Sabino High School on the District's east side. Based on the

success of the pilots, the District likely will expand express shuttles in the 2017-18 school year to schools such as Booth-Fickett Magnet School and Palo Verde.

The District's Family and Community Engagement director supervises the operation of four geographically-diverse family support centers and the Student Assignment director runs a centrally located family information center. All five centers provide expanded opportunities for parents and students to receive information about magnet options, to ask questions about specific magnet schools and programs, and to learn about transportation and enrollment options. Families can submit magnet applications at every center, and center staff is trained to provide information in a language-accessible manner and to actively recruit students to encourage thoughtful and meaningful educational choices. As many families might not have access to transportation to family centers or access to the internet to learn about school options or enroll online, this information is also available at all school sites. As mentioned previously, the District is initiating an "Enrollment Bus" in the summer of 2016 to travel the city to events, churches, and community events to increase the provision of information on magnet schools and programs and other educational options to a wider range of families and students. The District and its magnet schools conduct extensive community outreach, and the Enrollment Bus adds another dynamic, mobile, and highly-visible tool. The bus will include a dedicated bilingual student recruiter, WiFi access, and computers so that families can enroll on the spot. Another key component of District marketing and recruitment during the 2016-17 school year will be an intentional effort to highlight the benefits of integrated learning environments for families and students. Providing the infrastructure to increase access is meaningless if the District cannot create parent demand and interest, and the District will seek to market these benefits to students—particularly those who are the most racially isolated.

QUALITY OF PROJECT DESIGN

Tucson Unified has identified adequate need to address all Competitive Preference Priority Areas described in the Federal Register. Below, please find Priority 1: Need for Assistance, Priority 2: New or Revised Magnet Schools Projects, Priority 3: Selection of Students, Priority 4: Promoting STEM, Priority 5: Supporting Strategies for which there is Evidence of Promise. In addition, the District has included the Invitational Priority to address Racial and Socioeconomic Integration Evidence of Promise in the Project Design section.

(1) Priority 1: Need for assistance

A. The costs of fully implementing the magnet schools project as proposed.

Tucson Unified School District (TUSD), the second largest school district in Arizona, is facing enormous challenges, including an overwhelming budget deficit, racially isolated schools, low academic achievement gaps, and magnet programs in need of revision.

The annual cost to implement the MSAP magnet schools project is $3.2 million. That total is driven by the need to build programmatic capacity. None of the four schools included in this grant proposal were initiated as a science or STEM magnet school; the District and the Magnet School Assistance Program (MSAP) require collaborative effort and funding to further grow these programs so that students in grades K-12 can participate in unique and rigorous STEM education options. These costs include implementing distinctive education programs that will attract and retain students, thus reducing minority group isolation and improving ethnic/racial balance within the school communities. The schools included in this proposal recognize the achievement gaps between minority and non-minority students, yet the programs are falling short of successfully serving the diverse populations that reside within the District's boundaries.

Effective program development and implementation require systemic reform. Such comprehensive change involves the participation of all stakeholders as well as research-based quality resources and programs that include parents and the Tucson community in a dynamic and exciting collaborative partnership with magnet schools. Other costs include training stakeholders and implementing innovative educational methods and practices that improve achievement, promote diversity, and improve school climate and culture. To be competitive in recruiting efforts, the programs need up-to-date resources and technology as well as training for key personnel.

B. The resources available to the applicant to carry out the project if funds under the program were not provided.

The recently released Arizona Auditor General's report found that Arizona's classroom spending percentage for 2015 was the lowest it has been in 15 years. If only state funding is considered, per pupil expenditure is lower in Arizona than in any other state in the nation, at 55.1 percent of the national average (Table 4). The state relies upon federal sources to supplement essential educational funding; those supplemental funds bump Arizona into 48th place for educational expenditure, or 68.5 percent of the national average.

Table 4. Arizona school funding compared with the U.S. Average.

Change In Per Pupil Public School Revenue K-12 Education RY 1992 - FY 2013				
FY 1992	**Federal Sources**	**State Sources**	**Local Sources**	**Total**
US	$361	$2,661	$2,598	$5,621
Arizona	$453	$2,086	$2,391	$4,931
AZ Rank	6	39	26	34
AZ % of US Average	125.5%	78.4%	92.0%	87.7%
FY 2013	**Federal Sources**	**State Sources**	**Local Sources**	**Total**
US	$1,126	$5,650	$5,603	$12,380

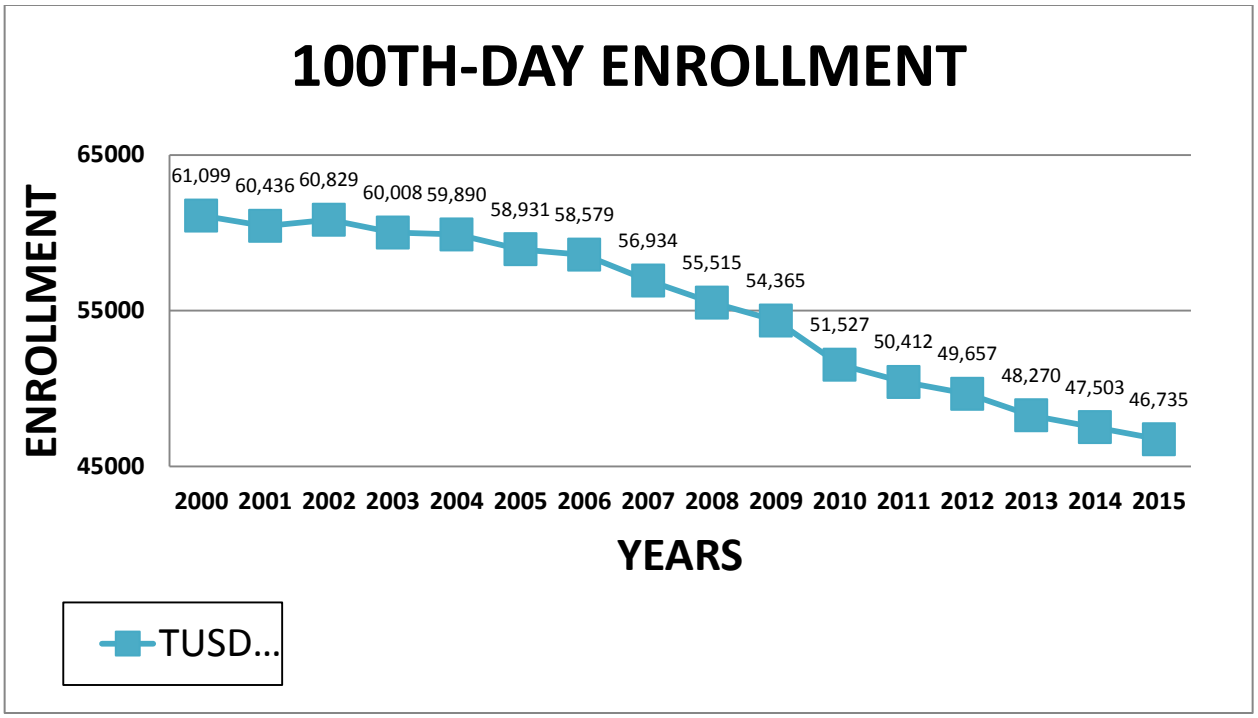
Arizona	$1,251	$3,116	$4,232	$8,559
AZ Rank	17	50	30	48
AZ % of US Average	111.1%	55.1%	75.5%	69.5%

Arizona school funding compared with the U.S. Average.
(Arizona Association of School Business Officials, 2015)

Tucson Unified enrolls 68 percent of the student population that resides within its boundaries and currently has 15,000 empty seats. Mobility within the District is high, at 42 percent; 18,814 students leave the area, 26,153 stay at their neighborhood school, and 19,760 enter the District / attend a school that is not their neighborhood school. Of those students who do not attend their neighborhood school, only 1,699 enter the District from other districts.

In addition to increased mobility, other factors have contributed to a loss in Tucson Unified student enrollment, including an aging population, immigration legislation, and increased charter school enrollment. District enrollment has dropped from 61,099 students in 2000-2001 to 46,735 in the 2015-16—a decrease of 23.5 percent (Figure 1). Financial resources will continue to decline with decreasing enrollment. To cut costs and become more efficient, the District has closed 20 schools since 2010 and consolidated one. Despite expected savings from these actions, the District faces an estimated current budget shortfall of $17 million. Proposed cost-saving measures under consideration by the District's Governing Board include eliminating counselors, librarians, administrators, and academic support staff at the magnet sites and central personnel at the District level.

Figure 1. TUSD 100th day enrollment totals for the years 2000-2015.



In addition, the total costs of implementing the District's court-ordered Unitary Status Plan (USP) mean that desegregation funding streams currently allocated to the schools will be further reduced. No alternative financial resources are available at this time to support the four magnet programs that are proposed. However, District STEM pipeline schools are popular; while the district has been losing students, every one of the schools included in the STEM pipeline has gained enrollment (Table 5).

TABLE 5. Enrollment increases at the four MSAP STEM schools.

School	100th Day Enrollment 2011-12	100th Day Enrollment 2015-16
Borton	368	424
Mansfeld	667	791
Palo Verde	954	1,138

Tucson High	2,952	3,093

Though the District is fully committed to the concept of magnet schools, there are no resources to support additional programmatic / capacity building amid a budget shortfall and decreased available desegregation funds. Research shows that magnet schools reduce minority group isolation and data indicates magnet schools historically improve student achievement. Tucson Unified has created a magnet department that oversees and manages all phases of magnet schools, including program development, curriculum, assessment, professional development, program evaluation, monitoring, marketing, recruitment, parent involvement, and community outreach. In order to continue to build on the success of the four STEM pipeline magnet programs included in this grant, federal funding is absolutely crucial.

C. The extent to which the costs of the project exceed TUSD's resources

In light of school closures, position elimination, and decreased services, the District must find a way to provide the very support that is being eliminated if the magnet programs are to be successful. Robust magnet programs and Kindergarten through 12th grade pipelines are essential. The funding from the Magnet School Assistance Program (MSAP) grant will provide high quality professional development, rigorous curriculum, state-of-the art technology, and intervention and enrichment opportunities for students within the TUSD STEM pipeline. Parents will have more options for school choice, including completed vertical articulation of programs.

D. The difficulty of effectively carrying out the approved plan and the project for which assistance is sought, including consideration of how the design of the magnet schools project impacts the applicant's ability to carry out the approved plan.

Challenges in carrying out the approved plan include developing a comprehensive plan for implementation, carefully identifying the schools to be involved, and thoughtfully choosing themes to be emphasized.

A plan for successful implementation has been created and is addressed in the Quality Management Plan section. This plan includes the creation of an effective Magnet Leadership Team that is trained in transition management and teacher training in theme-based pedagogy. All portions of this plan are outcome driven by the project's goals to reduce minority group isolation, improve student achievement, increase parent and community involvement, and build sustainable programs.

Schools were carefully chosen based on current levels of minority isolation, capacity, and location within the District. Themes were identified for inclusion into completed Kindergarten through 12th grade magnet pipelines in response to expressed stakeholder interest and support in programs that offer options for STEM/science education and increased academic rigor. The creation of pipelines that are attractive to parents around the District will lead to programs that are increasingly desegregated, and the choice of themes that are challenging and integrated will lead to students who are academically successful.

(2) Priority 2: New or revised magnet school projects

The court-ordered USP requires the District to continue to implement magnet schools and programs as a strategy for assigning students to schools and to provide students with the opportunity to attend an integrated school. The USP also grants the District the ability to create new magnet programs. Mansfeld STEM Middle Magnet School was recognized as a new magnet program by the District's Governing Board in 2014, after an initial planning year in 2013. Considered at that point to be an academically struggling program, this school was granted

magnet status for integration and achievement potential based on its central location adjacent to the University of Arizona (UA), an administration and staff that was highly enthusiastic and motivated about the inception of a STEM magnet theme, and initial commitments of local partners to the STEM program. Since its initial inception as a magnet program, the UA has become a highly engaged partner to support and sustain this engaging STEM academic program.

State and district assessments have changed since the 2013-14 school year; therefore, consistent data for comparing achievement gains over time is not available. However, a review of third-quarter District benchmark data clearly indicates that STEM education is having a powerful effect on student achievement. ELA scores for 6th and 7th graders were 5 to 10 percent above District average; math scores were a notable 14 to 20 percent above District average in all grades during the final benchmark test for the 2015-16 school year. The only grade and subject that fell short of the District average was 8th grade ELA. Mansfeld's success in surpassing the District average in almost all areas may be attributed to a strong and collective commitment by the school administration and staff, routine opportunities to participate in professional development beyond District requirements, and time within the school day dedicated to teams working within professional learning communities (PLCs). In addition to initial partnerships that have been strengthened over time, Mansfeld routinely creates new ways to engage the community, including students, families, and new partners.

Though still considered a New and Emerging program by the Magnet Schools of America, Mansfeld has made a name for itself as a model in the District. In addition, it received national recognition in 2016 when it won the Magnet Schools of America Merit Award of Distinction. Mansfeld has become a strong link in the TUSD STEM pipeline. MSAP grant funding will allow

Mansfeld to continue on this trajectory of success by further building the program with more advanced professional development opportunities, student interventions, and STEM resources.

(3) Priority 3: Selection of students

The court-ordered USP recognizes that students from all racial and ethnic backgrounds shall have the opportunity to attend an integrated school. Under existing policies and procedures, students are assigned to magnet schools through a lottery process. This process will be used for the selection of students to the proposed magnet schools. If a magnet school or program is oversubscribed, the District will use a weighted lottery that takes into account the following criteria:

- Students residing within a designated preference area. No more than 50 percent of the seats available shall be provided on this basis.
- Siblings of students currently attending the magnet school or program.
- Any students from Racially Concentrated Schools, whose enrollment will enhance integration at the magnet school or program.
- Students residing in the District.

The District will maximize the opportunity to promote diversity and provide school choice, which is central to fulfilling the purpose of the magnet program. By providing equitable access to magnet schools through a comprehensive student selection process, the District will reduce or eliminate minority group isolation. The student assignment goal for all magnet schools and programs shall be to achieve integration as defined in the court-ordered USP.

With the goal of decreasing minority isolation, the Magnet Office will work to provide increased equal access in MSAP schools and will implement an aggressive recruiting and marketing plan.

(4) Priority 4: Promoting Science, Technology, Engineering, and Mathematics (STEM) Education

Pipeline Commitment and Capacity in STEM

All of the STEM pipeline schools included in this grant have built a strong beginning foundation upon which to build innovative, comprehensive, world-class rigorous STEM programs. Research shows that culture and conditions matter as much, if not more than, other school and community factors (National Academy of Sciences, 2011). Elements that were identified as common in improving student learning include:

1. Strategic and focused school leadership
2. High professional capacity of school staff
3. Active family engagement
4. A learning climate that is student-centered
5. Challenging curriculum and instructional guidance

Each school included in the MSAP grant proposal has developed a Magnet School Plan (MSP) for 2016-17 based on available district funds that address specific, court-ordered achievement and diversity goals. These include strategies that encompass all of the essential elements in approving achievement found above. The MSAP grant will allow each of these schools to significantly expand their ability to implement these goals, especially regarding professional development and time available for staff to participate in PLCs to increase rigor, differentiate instruction, and provide interdisciplinary foci around STEM practices. Classroom practice will emphasize PBL and systems thinking that teach students analytical ways to think about and solve problems using creative, cooperative approaches. This will be especially helpful in closing the achievement gap at each school; research shows that Hispanic, African American,

and female students show increased growth, higher achievement, and an increased ability to use higher order thinking skills in both ELA and math when participating in STEM programs (Oner, 2015; Haak, 2011; National Science and Technology Council, 2013) .

The strategies defined by the four schools in their MSPs also address the three current priorities set by the federal Office of Science and Technology Policy (2015, 2016), which include expanding access to rigorous STEM courses, improving STEM teaching, supporting active learning, addressing bias, and expanding opportunities for underrepresented students in STEM.

The schools involved in the District's STEM pipeline have developed partnerships with local, regional, and national agencies to strengthen and extend classroom learning. In many circumstances, these partnerships support existing project- and problem-based learning. In all circumstances, these partnerships—a few of which are showcased below—are designed to increase student performance and better prepare students for further STEM learning and possible STEM careers as adults.

Students at both Mansfeld and Tucson High have existing or planned partnerships with the UA Sky School. During this overnight research experience, students work in small groups with UA graduate students to conduct field research built upon student observations and questions. Students emerge from the Sky School transformed. They see the world differently and begin to make connections where they previously would not have, and they have reported a solid interest in studying specific fields of science in college as a direct result of the experience the partnership provides.

All four schools have established gardens that require the support of outside partnerships. Borton Magnet Elementary School, Mansfeld, and Tucson High Magnet School

work hand in hand with the UA in a program that takes the classroom into the garden, allowing students to explore ecology, soil science, conservation, art, and photography; gain critical thinking skills; conduct real-world research; and plant, harvest, and sell food they produce. Projects at each site are developed directly with student groups and classes, with students doing the bulk of the work. Borton has developed a certified community garden that feeds healthy food directly to the school cafeteria. Mansfeld has constructed a small, raised garden that after-school clubs use to learn about gardening, nutrition, and cooking. The school also has participated in cloning heirloom fruit trees. Some of the trees will be planted at the site and others will be sent to students' homes. Tucson High and Palo Verde High Magnet School maintain greenhouses. At Palo Verde, these greenhouses serve an additional function, providing real-world connections to curricula for exceptional education students. At Tucson High, the greenhouse connects students to the UA College of Agriculture and Life Sciences. This same partnership also has placed mini-LEO (Landscape Evolution Observatory) experiments at Borton and Mansfeld. In partnership with the LEO project at the UA's Biosphere 2, students work as external consultants for the UA researchers, studying how ecosystems will respond to climate change. In their mini-LEO experiments, students test seed growth in the same type of substrate that lines the massive LEO hillslopes. Results are fed to the researches at Biosphere 2 and will be used in two years when the UA begins planting.

Women in Science and Engineering (WISE), a UA-based group, supports all four schools named in the pipeline in a variety of ways. WISE has worked with teachers from each of the schools to expand student access to environmental science educational opportunities through the Schoolyard Biodiversity Inventories Program. Additionally, WISE has supported the development of the Girls Excelling in Math and Science Club at Mansfeld by providing UA

students to coordinate program activities and field trips to the UA campus. WISE also has placed UA undergraduate and graduate students with the after-school robotics clubs at Borton and Mansfeld to provide supplemental instructional support. These programs are in their infancy and can only be expected to grow under the leadership of their new director, who has an interest in increasing academic opportunities and access not only for women, but for minorities in STEM as well.

Tucson High and Palo Verde have established partnerships with the UA Colleges of Science and Neuroscience and with Pima Community College (PCC). These partnerships provide the schools' STEM students with the opportunity to participate in dual-credit and research opportunities at the collegiate level. This unique partnership provides the STEM students the support they need to successfully move on to centers for higher learning.

The National Phenology Network has partnered with student groups at both Borton and Mansfeld. Students learned about phenology, the study of seasonal life-cycle events such as leafing and flowering, and its connection to climate research. As a result, students at both schools have constructed phenology trails where students can collect data. The trails at both schools are open to the community, allowing others to connect with STEM research as well. Data collected by students and community members directly inform climate change research across the country. This opportunity to contribute to "real science" encourages students to seriously apply their STEM skills.

Finally, the schools in the pipeline partner with the STEM Learning Center. This partnership advises the sites and connects the schools to outreach, to university faculty who support project- and problem-based learning opportunities, and to experts who can advise on integrated curricular units. This partnership directly strengthens the content students receive in their classes and

prepares them with the skills STEM professionals see as most important for use in university or career settings.

Each of the sites has established unique partnerships. Borton, the school that has been using problem- and project-based learning longer than the other schools within the STEM pipeline, has partnerships with Westland Resources, the Community Food Bank, Trees for Tucson, the South Tucson Optimists, and Community Share. Each of these partnerships was the direct result of a student-proposed solution to a problem or a project the students believed would better the lives of the Borton community. Mansfeld has developed partnerships with the Arizona Trail Association (ATA), the National Parks Service (NPS), and the Society of Hispanic Professional Engineers (SHPE). The partnerships with ATA and NPS bring students out to conduct short- and long-term research in a field setting. The partnership with SHPE brings students to the UA to explore engineering workshops hosted by undergraduate students and faculty from the College of Engineering. Tucson High partners with the Sierra Club and the Southern Arizona Research, Science and Engineering Foundation to engage students in studying and showcasing that research. The Rincon Rotary Club has worked with Palo Verde to help create a Marine Biology Lab, and Biosphere 2 has collaborated with teachers to share resources, develop ties with curriculum, and support students in attending residential education programs. Also partnering with Palo Verde, the UA's Tech Parks Arizona has offered opportunities for high school students to participate for the last two years in "Racing the Sun," a solar energy project. PCC also has partnered with Palo Verde; in addition to the support the community college offers, it is actively working to solicit industry partners to work with high school students.

These partnerships, developed over time, serve to directly improve student STEM achievement and provide students with equitable access to STEM learning outside the

classroom. Borton, Mansfeld, Palo Verde, and Tucson High, along with their partners, are dedicated to continuing and strengthening these relationships as the STEM programs grow over the next several years. The sites also are committed to developing additional partnerships during and after the grant cycle.

(5) Priority 5: Supporting strategies for which there is evidence of promise

Research supporting the importance of socioeconomic integration goes back 60 years to the Coleman Report, which found that the strongest predictor of student achievement was the socioeconomic composition of the students enrolled within the school (Coleman et al., 1966). One of the strengths of Tucson Unified's Magnet Programs lies in the opportunity for diversity. Magnet students at all four schools are selected based on a weighted lottery system according to ethnicity. At Borton, Mansfeld, and Palo Verde, half of the program's seats are reserved for neighborhood students and half are opened for magnet students. At Tucson High, magnet students are placed into the natural science program; their neighborhood peers may join them in their magnet classes though they are not officially considered to be magnet students. This mixture of magnet and neighborhood students helps ensure a greater range of students with different ethnicities and socioeconomic backgrounds. Rumberger and Palardy (2005) found that the socioeconomic composition of a school was as strong a predictor of student outcomes as students' own socioeconomic status.

The Federal Free and Reduced Lunch percentages for each of the four campuses range from 12 points below the District average to three points above (Table 6). This reflects student populations that are composed of student bodies from a mix of socioeconomic backgrounds, and in most cases more so than the District average.

Table 6. **Percentage of free and reduced lunch students at STEM pipeline schools.**

Site		2012-13	2013-14	2014-15	2015-16
Borton Primary Magnet School		52.29%	60.47%	61.80%	62.47%
Mansfeld Middle School		74.62%	77.26%	76.42%	73.47%
Palo Verde High Magnet School		70.28%	72.29%	73.52%	73.88%
Tucson Magnet High School		58.74%	59.50%	60.80%	58.18%
District		70.93%	71.80%	73.06%	70.88%

Tucson Unified promotes the use of the Multi-Tiered System of Support (MTSS)/Response to Intervention (RtI) process. Response to Intervention is defined as "the practice of providing high-quality instruction and interventions that are matched to student need, monitoring progress frequently to make decisions about changes in instruction or goals, and applying student response data to important educational decisions" (National Association of State Directors of Special Education, 2006). The Multi-Tiered System of Support emphasizes using data to focus on students who are struggling in order to provide targeted support services to increase achievement and improve behavior.

The four MSAP STEM schools will continue to use the RtI and MTSS practices while also committing to a pedagogical framework that embraces systems thinking and project-based learning. These methods provide an approach to integrating curriculum in ways that are meaningful and relevant to students' lives at school, at home, and in their communities.

A. Promoting a common pedagogical framework for all: Systems Thinking and Project-based Learning

1. Systems Thinking

Systems thinking is a world view that recognizes the interdependencies and interrelatedness of systems in the world. Rather than seeing them as a collection of distinct elements, Systems thinking sees how these elements function as a whole. Systems thinkers develop certain habits of mind that lead to analytical and problem-solving skills. Research by the Waters Foundation, representing a culturally diverse cross-section of students, classrooms, and schools and covering a wide range of geographic and socioeconomic settings, found that:

- Students used systems thinking tools to clarify and visually represent their understanding of complex systems.
- Systems thinking tools helped students make connections between curricular areas and relevant life experiences.
- Students of all ages learned and independently used systems thinking problem-solving strategies.
- When using systems thinking concepts and tools, many students showed increased motivation, engagement, and self-esteem.
- Systems thinking concepts and tools helped students develop as readers and writers.

Across the schools in the Waters Foundation project, systems thinking classrooms effectively addressed the basic and applied skills as interdependent capabilities that students need in order to understand and work within the complex systems that surround them. Educators working within the project found that the short-term goals of mastery of grade-specific skills was best accomplished and transformed into long-term learning through a systems thinking approach that immersed students in relevant problem solving, interdisciplinary connections, and opportunities for in-depth analysis and thought provoking dialogue. Moreover, they found the systems thinking learning environment to be particularly motivating and engaging for the most reluctant learners,

enabling them to organize and express their thinking (Systems Thinking in Schools: A Waters Foundation Project).

The Creative Learning Exchange noted that one of the most difficult areas in STEM curriculum is creating the context for students to be critical thinkers. Systems thinking is considered a method by which higher order and critical thinking skills can be brought to the forefront. By providing an integrated way of thinking about systems and change, students have tools with which to tackle rigorous STEM learning.

2. **Increasing Interaction with Student Grouping: Project-Based Learning**

Within all sites, grouping and regrouping of students for instruction must be a fluid process, with groups changing according to the learning outcomes and student need for differentiated instruction. Students will be grouped for project teams and interdisciplinary teams where content learning takes place across grade levels. Schools will explore restructuring the school day to include student teaming for PBL. This will include cross-age and cross-ability grouping as determined by each site based on data analysis and school culture. Teachers will receive training in how to group students so that extended and frequent opportunities for interactions with those from different racial and ethnic backgrounds will be available. The positive outcomes of PBL are backed by research, which has shown that PBL experiences benefit lower performing students and reduce the achievement gap (Han, Capraro & Capraro, 2015).

Research also has shown that students who use PBL in STEM learning, whether in small groups or individually, show superior mastery of instruction compared to peers who were taught using lecture/discussion models (Wirkala and Kuhn, 2011). Achievement gains have been shown across subject areas. For example, Olivarez (2012) found: "(P)articipation in a STEM academic

program, where teachers use Project-Based Learning (PBL), collaborative learning, and hands-on strategies, positively impacted 8th grade students' academic achievement in mathematics, science, and reading."

Other research has found that active and collaborative instruction that encourages student engagement leads to better student learning outcomes across disciplines (Kuh et al., 2007). This is especially true in comparison with traditional lecture and discussion methods (Pascarella & Terenzini, 2005). However, instructional effectiveness of active STEM learning strategies have been shown through empirical evidence to be ineffective in changing teaching methodology, except when successful change strategies are implemented. These change strategies include establishment of an off-site network of colleagues; mainstream willingness to participate; development of a distinct model for implementation, dissemination, and institutionalization for STEM reform; and more effort on the initial implementation of proven effective strategies than on the assessment of outcomes (Fairweather, 2008).

In addition to systems thinking, the four MSAP STEM schools have committed to integrating project-based learning (PBL) into their magnet classrooms. A considerable body of research exists attesting to the success of PBL in providing benefits to students, from deeper learning of academic content to stronger motivation to learn and the acquisition of 21st century skills. Below are some of many studies justifying the implementation of this approach to learning:

Academic Achievement:

- Students learning through PBL retain content longer and have a deeper understanding of what they are learning (Penuel & Means, 2000; Stephen, Gallager, & Workman, 1993).
- In specific content areas, PBL has been shown to be more effective than traditional methods for teaching math, economics, language, science, and other disciplines (Beckett

& Miller, 2006; Boaler, 2002; Finkelstein et al., 2010; Greier et al., 2008; Mergendoller, Maxwell & Bellisimo, 2006).

- On high-stakes tests, PBL students perform as well or better than traditionally taught students (Parker et al., 2011).

21st Century Competencies:

- Students demonstrate better problem-solving skills in PBL than in more traditional classes and are able to apply what they learn to real-life situations (Finkelstein et al., 2010).
- Opportunities for collaborative learning provide benefits to students across grade levels, academic subjects, and achievement levels (Johnson & Johnson, 2009; Slavin, 1996).

Equity:

- PBL shows promise as a strategy for closing the achievement gap by engaging lower-achieving students (Boaler, 2002; Penuel & Means, 2000).
- PBL can work in different types of schools serving diverse learners (Hixson, Ravitz, & Whisman, 2012).
- PBL also can provide an effective model for whole-school reform (National Clearinghouse for Comprehensive School Reform, 2004).

Motivation:

- In PBL classrooms, students demonstrate improved attitudes toward learning. They exhibit more engagement, are more self-reliant, and have better attendance than in more traditional settings (Thomas, 2000; Walker & Leary, 2009).

In order to maintain the high level of project work and the integration of systems thinking, continuous professional development is critical. The MSAP grant will allow for intense front-

loading of professional development. This training, collaborative support for planning and teaching, and ongoing professional learning experiences for all faculty and staff are needed to maintain and strengthen a high quality STEM pipeline. Through Magnet Department funding, professional development opportunities will continue after the life of the grant. A mentoring system also has been built into the project design portion of the plan to aid teachers who are new to the MSAP STEM pipeline schools.

(6) Invitational Priority: Racial and Socioeconomic Integration Evidence of Promise

A. Tucson Unified will promote desegregation and will increase interaction among students of different social, economic, ethnic, and racial backgrounds.

There are two primary objectives associated with the goal of promoting desegregation by reducing minority isolation. The first is to create and maintain schools that are racially integrated, as defined by the District's USP, by promoting the enrollment of non-minority students at each site through aggressive recruitment and marketing strategies.

The second objective is to reduce minority isolation by offering opportunities for students from diverse backgrounds to interact and engage with each other. Performance measures include the extent to which instructional strategies promote student interaction and engagement in the classroom as well as opportunities outside of classroom settings. Steps to increasing positive interaction among students of different social, economic, ethnic, and racial groups must be intentional and deliberate. Promoting positive interaction is a philosophy embraced by all magnet program stakeholders. Opportunities for interaction must be embedded within instructional practice throughout the school day. All magnet programs will utilize core strategies to increase positive interaction among students in the classroom and community. These strategies are described in more detail below.

(7) Project Design: The MSAP STEM Pipeline

The District is applying for a Magnet School Assistance Program Grant in order to solidify and strengthen a STEM pipeline that attracts and retains a diverse community of students from Kindergarten through 12th grade. The magnet schools selected to be part of the initiative demonstrate great promise for successfully expanding existing programs to provide an exceptional academic experience that prepares students for post-secondary education and STEM careers.

As outlined in the district-wide logic model below, the District will dedicate time and a diverse pool of human resources toward a broad array of strategies designed to achieve the project's goals of increasing integration and reducing minority isolation, increasing parent and community involvement and decision making, implementing rigorous STEM educational experiences, improving student achievement, and decreasing achievement gaps between genders and ethnicities.

MSAP District-Wide Logic Model

Inputs	**Outputs**	**Outcome**		
Resources What we invest. • Staff • Volunteers • Time • Partners	**Activities** What we do. • Conduct workshops • Develop curriculum • Train, Assess, Partner, Facilitate	**Short-term outcomes** • Learning • Awareness • Knowledge • Skills	**Medium-term outcomes** • Action • Behavior • Practice • Policies	**Long-term outcomes/Impact** • Conditions • Social • Environmental

• Staff and students with diverse perspectives, backgrounds, and abilities • Diverse members of the school community, including teachers, students, parents, administrators • Cultural awareness in students and adults • Teachers committed to providing	• School-wide cross-curricular and cross-grade level implementation initiatives, including systems thinking, project-based learning, and collaborative learning environment • Fluid intervention and enrichment opportunities based on formative and summative assessment analysis • Emphasis on academic vocabulary • Provide K-12 vertical articulation of theme • PLCs using district frameworks and rubrics, including facilitation	Identify cross-school networks to share, discuss, and understand best practices	Equal access for all students achieved by implementing complementary strategies to increase inter-group interaction	Decreased magnet minority student isolation as determined by student interaction and engagement and measured by school quality survey intercultural proficiency sub-group questions observations, and increased enrollment in non-minority populations by 2%
		Define rigorous learning opportunities	Magnet schools reach program capacity	Rigorous STEM practices that complement and build upon

instructional strategies that embed rigorous STEM practices in cross-curricular units through active project-based and/or collaborative learning • Inclusive student selection process aimed at reducing minority isolation • PLCs that examine student achievement in relation to	training • Coaching and mentoring • Professional development • Augment STEM facilities and resources • Transportation provided for magnet students • Inclusive access to technology • Weighted lottery practice for sibling placement • Provide rigorous programs and innovative course offerings • Collaborate with district Communications Department in aggressive marketing and	to meet the needs of all students		District curriculum as identified by the Danielson Framework 75% of teachers rated as effective or highly effective as measured principal assessments
		Recognize engaging instructional strategies	Lower performing schools become higher performing schools	Improved student achievement by 2% each year measured by percent of magnet students achieving proficiency on state assessments
		Understand how to structure and	Increased magnet schools inclusivity and	Decreased achievement gaps by 2% each year

instruction, intervention, and enrichment • Opportunities for teachers to engage in vertical and horizontal data analysis and planning • School culture that embraces diversity and rigor • Inclusive student selection process aimed at reducing minority isolation • Training in	recruitment campaigns using best practices •Outreach to families and community at recruitment events •Targeted recruitment from oversubscribed schools, feeder schools, and pre-schools. •Unit development aligned to district curriculum •Create and use formative assessments to drive instruction •Student data review in PLCs •School-wide data review •Use SchoolCity benchmark assessment	run successful PLCs, supervised and guided by an appointed site staff member	diversity	between minority and non-minority students and genders by 2% measured by performance on state assessments
		Understand systems thinking and PBL		
		Recognize model STEM practices and how to integrate them into district curriculum	Achieved capacity and sustainability of foundational STEM elements by pairing site mentors with new teachers	Increased parent and community involvement as measured by attendance tracking, observation, and surveys by 10% from year 1 to 3
		Incorporate systems thinking, project-based	Incorporated differentiated learning into the culture of	Increased technological capacity by 10% by year 3 as

school improvement practices to reduce or eliminate achievement gaps • Partnerships aimed at creating sustainability of program implementation • School culture that embraces diversity and rigor	data for analysis •Use of common formative assessment to guide unit development and intervention opportunities •Utilize co-teaching model for Exceptional Education students when appropriate •Ongoing professional development in culturally competent practices •STEM Enrichment opportunities for all students •Family engagement activities •Before/after-school	learning and collaborative learning into STEM unit development as appropriate	the school for both students and teachers	measured by the district's annual Technological Capacity Index
			Ongoing professional development aligned according to site need	
			Protocol developed for data talks, including teacher to teacher, teacher to student, teacher to parent	

	opportunities for STEM enrichment and academic intervention • Reflective review of unit and lesson plans by colleagues using feedback protocols			

The MSAP STEM pipeline includes Borton (Systems Thinking/PBL), Mansfeld (STEM), Palo Verde (STEAM), and Tucson High Magnet School (Natural Science). Parents of students graduating from Borton will receive a pipeline letter offering their children placement into Mansfeld. Once students graduate from Mansfeld, and based on student interest, parent preference, district desegregation requirements, and availability, parents will be offered a split pipeline opportunity into either Tucson High or Palo Verde. The Borton, Mansfeld, Tucson High, and Palo Verde STEM pipeline provides students with a solid foundation at the elementary grades, deepens student understanding of STEM at the middle grades, and allows students to specialize in a study of the natural sciences or engineering at the high school level.

All four schools included in this proposal have a history of success in implementing federal and state grants as well as experience in creating sustainable partnerships and programs. In addition, three of the four schools have won Magnet Schools of America Awards and all have staff members that have been recognized at district, state, and national levels with accolades, awards, and appointments. There is also community buy-in; according to a survey conducted during a recruitment event in January 2016, Tucson's community ranks STEM education as one

of two themes that are "best" for K-12 students. When combined with student opportunities for advanced learning experiences, STEM moves to the top of our community's list. A summary of the magnet schools and their themes is found in Table 7.

Table 7. MSAP STEM School Themes

School	Grades	Year of Magnet Implementation	Year of Theme Implementation	Magnet Theme
Borton Elementary	PreK-5	1979	2004	Systems Thinking/PBL
Mansfeld Middle	6-8	2014	2014	STEM
Palo Verde High	9-12	1995	2010	STEAM
Tucson High	9-12	1983	2010	Natural Science

The creation of a STEM pipeline in the District addresses both national and local needs for students to be prepared to step into STEM careers. Additionally, considering the historic lack of minorities represented in STEM careers, establishing a well-connected STEM pipeline will prepare a large number of minority students to enter college ready to major in STEM fields.

To ensure that the pipeline is strong, teachers at the four sites are committed to common professional development and implementing a common pedagogy. If awarded the grant, all sites will commit to providing 80 hours of training in systems thinking, STEM practices, and project-/problem-based learning over the next three years. Research has shown that this level of time

commitment to professional development is necessary for teachers to internalize practices learned. In addition, two separate evaluations of a year-long program designed to promote inquiry-based science instruction found that teachers who received 80 or more hours of professional development were significantly more likely to put the given teaching strategies into practice than were teachers who had received many fewer hours (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009).

This common professional development will ensure that the sites utilize a common pedagogical approach to STEM education, facilitating student success as they move along the MASP STEM pipeline. Each program, discussed below, adds its unique contribution to the STEM pipeline.

Borton Site-Level Logic Model

As described in the Borton logic model, below, Borton's magnet program is aimed at decreasing minority isolation, increasing student achievement and narrowing achievement gaps, using systems thinking and STEM practices that teach students to identify and solve problems, growing sustained community partnerships, and ensuring the programs implemented will continue beyond federal funding.

Inputs	**Outputs**	**Outcome**		
Resources What we invest. • Staff • Volunteers • Time	**Activities** What we do. • Conduct workshops • Develop curriculum • Train, Assess, Partner, Facilitate	**Short-term outcomes** • Learning • Awareness • Knowledge • Skills	**Medium-term outcomes** • Action • Behavior • Practice • Policies	**Long-term outcomes/Impact** • Conditions • Social • Environmental

• Partners				
• Staff and students with diverse perspectives, backgrounds, and abilities • Diverse members of the school community, including teachers, staff, students, parents, administrators • Cultural awareness and of students and adults • Teachers committed to	• School-wide cross-curricular and cross-grade level implementation initiatives, including STEM/STEAM practices, systems thinking, PBL, and collaborative learning environment • Fluid intervention and enrichment opportunities based on formative and summative assessment analysis • Emphasis on academic vocabulary • Provide K-12 vertical articulation of theme • PLCs using district	Identify cross-school networks to share, discuss, and understand best practices	Equal access for all students achieved by implementing strategies to increase inter-group interaction	Decreased magnet minority student isolation
		Define rigorous learning opportunities to meet the needs of all students	Magnet schools reach program capacity	Increased percent of magnet students achieving proficiency on TUSD benchmarks, State of Arizona ELA and math assessments
		Recognize engaging instructional	Borton will continue to improve its	Program becomes sustainable

providing instructional strategies that embed systems thinking and rigorous STEM practices in cross-curricular units through active project-based and/or collaborative learning •Inclusive student selection process aimed at reducing minority isolation • PLCs that examine	frameworks and rubrics, including facilitation training •Coaching and mentoring •Professional development •Augment facilities and resources to support STEM/STEAM, PBL, and systems thinking •Transportation provided for in-district magnet students •Inclusive access to technology •Weighted lottery practice for sibling placement •Provide rigorous project work and opportunities to use	strategies.	academic achievement	
		Understand how to structure and run successful PLCs, facilitated by an appointed site staff member	Increased magnet schools inclusivity and diversity	Narrow achievement gaps between ethnicities and genders
		Understand systems thinking and project- and problem-based learning		
		Recognize model PBL, systems thinking and STEM/STEAM	Achieve capacity and sustainability of foundational STEM/STEAM,	Students are able to identify problems, generate questions, and

student achievement in relation to instruction, intervention, and enrichment • Opportunities for teachers and support staff to engage in vertical and horizontal data analysis and planning • School culture that embraces diversity and depth of knowledge • Professional	systems thinking across all curricular areas. • Collaborate with district communication department in aggressive marketing and recruitment campaigns using best practices • Outreach to families and community at recruitment events • Targeted recruitment that contributes to school wide integration • Project development aligned to district curriculum standards • Create and use	practices and how to use these approaches to meet district curriculum standards	PBL, systems thinking practices by pairing site mentors with new teachers	solve problems using the habits of a systems thinker and STEM practices
		Incorporate systems thinking, PBL and STEM/STEAM practices into project development as appropriate	Incorporate differentiated learning into the culture of the school for both students and teachers	Sustained community partnerships
		Identify potential community partnerships	Ongoing professional development aligned according to site need	

knowledge of school improvement practices to reduce or eliminate achievement gaps • Partnerships that support program sustainability	formative assessments to drive instruction • Student data review in PLCs • School-wide data review • Use of common formative assessment to guide project development and intervention and enrichment opportunities • Utilize co-teaching model for Exceptional Education students when appropriate • Ongoing professional development in culturally competent practices • STEM/STEAM, PBL, systems thinking,		Protocol developed for data talks, including teacher to teacher, teacher to student, teacher to parent, administrator to teacher	
			Develop and strengthen community partnerships	

	practices embedded in all curriculum • Family engagement activities • Before/after-school opportunities for STEM/STEAM, PBL and systems thinking enrichment and academic intervention • Reflective review of project and lesson plans by colleagues using feedback protocols			

Borton Magnet Elementary School

Borton implements a program focused around PBL and systems thinking. In all of Borton's classrooms, preschool through 5th grade, students are engaged in extended projects growing from driving questions of interest to the students or problems they observe in the school or larger community. Literacy, math, science, social studies, technology, the arts, and even physical education are brought to the service of these in-depth investigations. Throughout their projects, students apply the habits of systems thinkers, along with visual tools and simulations, to

understand how systems operate and find leverage for changes. Borton is well known and respected for its approach to learning and has been a demonstration site for the Waters Foundation Systems Thinking in the Schools Project for more than 10 years. In addition, outdoor learning is an integral part of the school's program. With community gardens certified for garden-to-cafeteria serving, a chicken coop, and a 2½-acre natural habitat with a resident tortoise, Borton students learn about the environment and healthy sustainable living and begin the road to becoming good stewards of the earth. The school's magnet focus draws the attention of the science and agriculture colleges at the UA, whose departments send their interns to work with students and teachers and whose researchers implement the outreach portions of their research projects with students from preschool to 5th grade. Most recently, the school has begun to work school-wide with GIS mapping with the support of a professional engineering and environmental consulting firm. One indication of long-term success at Borton is documented by the fact that many former students return years later to enroll their own children at the school.

Aligning STEM practices with the habits of a systems thinker and the PBL practices already in place at Borton is a comfortable fit. For example, STEM practices expect students to be able to design models, model with mathematics, recognize patterns, and use tools strategically. These practices are mirrored in the habits of a systems thinker. Much of this work forms the tools of the in-depth inquiry, the revision and reflection process, and the presentations of learning to public audiences required of a long-term project. These practices are put in place not only for STEM learning at Borton, but also in literacy, mathematics, the arts, and social sciences. In-depth experience with PBL and systems thinking position Borton students for success as they transition to the STEM/STEAM programs at the middle and high school levels.

During the first year of implementation of the MSAP grant, the school will assure that it has the equipment and materials needed to enhance the connections between PBL, systems thinking, and STEM education. Technology at the school is outdated and inadequate for even current uses. Although the school is WiFi enabled, there is not enough capacity for even a single classroom to log on at the same time. Projectors are old and too heavy to be ceiling mounted. The school has only one Promethean board. Currently, there is more demand for computer access for the research phase of projects than the 25-station lab and 30-laptop COW can provide. For the school's low-income students, access to technology at school may be the most important path for them to attain the technological knowledge and skills that they will be expected to have as they move on in their education and career preparation. The school has acquired about 20 iPads that are being used for photography, videography, GIS mapping, and other project-related purposes. As the students and teachers become more adept at using these tools in meaningful ways, there is more demand for them than the current school budget can meet. Thus, updating technology is a critical need.

All Borton teachers receive training in systems thinking and PBL, but the departure of long-time teachers and the arrival of new ones requires ongoing professional development in these areas. Moreover, continued professional training in collaboration with the other schools in the proposed STEM/STEAM pipeline will enhance opportunities for students' success as they transition to middle school and beyond. Added support for collaborative planning; opportunities to attend local and regional conferences; sustained professional development in PBL, systems thinking, and STEM/STEAM practices; and the ability to bring in specialists in these areas are all essential to the long-term viability of the program.

Mansfeld Site-Level Logic Model

As described in the logic model, below, Mansfeld will draw upon a large and active pool of teachers, students, administrators, community partners, and a positive, aware school culture and climate to achieve the goals of the project, including reduced minority isolation and increased integration, improved student achievement in ELA and math assessments, narrowed achievement gaps between ethnicities and genders, and the capacity to continue to nurture community partners and sustain the program beyond the grant's funding. Students in the systems thinking, STEM program will emerge able to identify problems and propose solutions.

Inputs	**Outputs**	**Outcome**		
Resources What we invest. • Staff • Volunteers • Time • Partners	**Activities** What we do. • Conduct workshops • Develop curriculum • Train, Assess, Partner, Facilitate	**Short-term outcomes** • Learning • Awareness • Knowledge • Skills	**Medium-term outcomes** • Action • Behavior • Practice • Policies	**Long-term outcomes/Impact** • Conditions • Social • Environmental
• Staff and students with diverse perspectives, backgrounds, and abilities • Diverse	• School-wide cross-curricular and cross-grade level implementation initiatives, including STEM practices, systems thinking, PBL, and collaborative learning	Identify cross-school networks to share, discuss, and understand best practices	Equal access for all students achieved by implementing strategies to increase inter-group interaction	Decreased magnet minority student isolation

members of the school community, including teachers, staff, students, parents, administrators • Teachers committed to providing instructional strategies that embed rigorous STEM practices in cross-curricular units through active project-based and/or collaborative	environment • Fluid intervention and enrichment opportunities based on formative and summative assessment and analysis • Emphasis on academic vocabulary • Provide K-12 vertical articulation of theme • PLCs using district frameworks and rubrics, including facilitation training • Coaching and mentoring • Professional development • Augment facilities and resources that support STEM, PBL, and systems thinking • Transportation provided for in-district magnet			
		Define rigorous learning opportunities to meet the needs of all students	Magnet schools reach program capacity	Increased percent of magnet students achieving proficiency on State of Arizona and TUSD benchmark ELA and math assessments
		Recognize engaging instructional strategies	Lower performing schools become higher performing schools	Program becomes sustainable
		Understand how to structure and run successful	Increased magnet schools inclusivity and diversity	Increased achievement, including closing achievement gaps

learning and systems thinking • Inclusive student selection process aimed at reducing minority isolation • PLCs that examine student achievement in relation to instruction, intervention, and enrichment • Opportunities for teachers and support	students • Inclusive access to technology • Weighted lottery practice for sibling placement • Provide rigorous programs and innovative course offerings • Collaborate with district communication department in aggressive marketing and recruitment campaigns using best practices • Outreach to families and community at recruitment events • Targeted recruitment that contributes to school-wide integration • Unit development aligned to district quarterly	PLCs, facilitated by an appointed site staff member		between ethnicities and genders
		Understand Systems Thinking and Project and Problem-Based Learning		
		Recognize model STEM practices and how to integrate them into district curriculum	Achieved capacity and sustainability of foundational STEM, PBL, Systems-Based Thinking practices by pairing site mentors with new teachers	Increased percent of magnet student achieving proficiency on ELA and math assessments

staff to engage in vertical and horizontal data analysis and planning • School culture that embraces diversity and academic depth of knowledge • Cultural awareness of funds of knowledge of students and adults • Professional knowledge of school improvement	curriculum standards • Create and use formative assessments to drive instruction • Student data review in PLCs • School-wide data review • Use of common formative assessment to guide unit development and intervention opportunities • Utilize co-teaching model for Exceptional Education students when appropriate • Ongoing professional development in culturally competent practices • STEM practices embedded in all curriculum	Incorporate systems thinking, PBL, and collaborative learning into STEM lesson/ unit development as appropriate	Incorporated differentiated learning into the culture of the school for both students and teachers	Students are able to identify problems, generate questions, and propose solutions by using the habits of a systems thinker and STEM practices
			Ongoing professional development aligned according to site need	
			Protocol developed for data talks, including teacher to teacher, teacher to	

practices to reduce or eliminate achievement gaps • Partnerships that create program sustainability	• Project and/or problem-based learning is a component of all courses • Family engagement activities • Before/after-school opportunities for STEM enrichment and academic intervention • Reflective review of unit and lesson plans by colleagues using feedback protocols		student, teacher to parent	
			STEM practices are integrated into district curriculum	
		Identify potential community partnerships	Develop and strengthen community partnerships	Sustained community partnerships

Mansfeld STEM Magnet Middle School

Mansfeld STEM Magnet Middle School has established itself as a strong STEM magnet school despite only having been a magnet school since the 2014-15 school year. Using the work of Dr. Jo Anne Vasquez (2013) as a guide, 17 STEM practices that transcend discipline were identified and used to begin developing and delivering professional development to the staff.

Grade-/content-level groups meet weekly in a structured format with a goal of developing common STEM language and expectations. As a result, the Mansfeld staff members regularly connect their content areas and standards to the STEM practices, allowing students in all disciplines to think and act as scientists, technologists, engineers, and mathematicians would as they tackle problems and projects proposed by their teachers. Each quarter, students demonstrate their understanding of STEM practices and their connection to their content areas by participating in a STEM project or problem. Teachers share both the successes and opportunities to improve their integrated STEM units at the end of each school year, providing cumulative accountability as well as the opportunity to learn from and draw inspiration from each other.

The strength of Mansfeld's program can be attributed to the cohesiveness of the staff, which has a very low turnover rate. Additionally, the dedicated time during the school day to conduct various PLCs has allowed teams to immerse themselves in the STEM practices while successfully working to increase student achievement and decrease the achievement gap. Mansfeld's hard work and commitment to the STEM program earned the school the Magnet School of America New and Emerging School of Distinction Award in 2015-16.

The STEM Practice Framework is a natural fit with Mansfeld's curriculum as well as the Arizona College and Career Readiness Standards (AZCCRS). As a part of Mansfeld's STEM PLCs, teachers created crosswalks aligning the 17 STEM practices with AZCCRS literacy and content practices. This allows the staff to leverage their instruction. For example, when students engage in the STEM practice "Engaging in Argumentation from Evidence," they are potentially engaged in the following AZCCR Standards: RI1, RST1, RH1-Citing evidence from a text, RI6-Determining point of view, RI8 and RH8-Tracing arguments/citing specific evidence and distinguishing among facts, as well as W1, WHST1-Writing arguments, and W7 and WHST 7-

Conducting research. While not an easy task, this served to showcase to the Mansfeld staff how interconnected the STEM practices are with every content on campus. The aligned crosswalk serves as a guide when staff design curricular units and lessons. In fact, Mansfeld emphasizes to students and the community at large that when students are engaged in STEM practices, they are engaging in systematic ways of thinking about and solving problems that will serve students in all possible careers, not just STEM careers.

If awarded the MSAP grant, Mansfeld will begin by upgrading its technology, investing in non-consumable materials to support integrated STEM units and collaborative projects, providing additional professional development, and hiring two STEM teachers. Mansfeld has wireless systems in place; however, access points get congested if traffic is high. Mansfeld will invest in increasing the number of routers on campus so access to online research and simulations is more feasible. The school also will upgrade the projectors and printers used by students and teachers in lesson delivery and student project presentation and invest in 3-D printers for the STEM core classes to allow students to create models for the problems they are solving. Additionally, Mansfeld will upgrade the tools used by students. Since precision and accuracy are valuable STEM practices, upgraded lab tools and equipment will be ordered to allow for more precise measurement. Wireless voting systems to quickly monitor and assess student understanding of content, projectors, printers, and USB flash drives for use in student project presentations will allow Mansfeld students to share the results of their integrated STEM projects in a more professional manner that helps prepare them for college and careers. For low SES students, school may be their only access to the technological tools they will be expected to have mastered prior to college or technical careers. Mansfeld has sent select teachers from each grade and content to STEM trainings; in order to stay current in topics and tools related to the

curriculum, however, teachers need continual training. Mansfeld staff will benefit from attending the 21st Century STEM Conference held annually in Phoenix, the STEMAZing Saturdays and Summer Institutes, and additional training on differentiated instruction and Capturing Kids' Hearts. In the past, Mansfeld staff had been trained in systems thinking, but many have since retired and new staff needs to be trained. Since many of the Mansfeld magnet students come from Borton, strengthening the systems-thinking modeling used at Mansfeld will benefit all students as they work collaboratively towards completing integrated STEM projects. Additionally, Mansfeld would use funds to hire two staff members to strengthen the STEM elective and STEM core offerings at 8th grade. Eighth grade was the last group to receive magnet students, and increasing the number of STEM core and STEM elective sections gives all magnet students access to a variety of STEM programming.

Finally, Mansfeld will use remaining funds to enrich STEM experiences through after-school programs, summer school, and extended field trips that will allow students to connect classroom and project learning to the real world. With the low turnover at Mansfeld, these expenditures will create a solid and sustainable STEM program that builds upon the successes at Borton and prepares students for the rigor of Tucson High and Palo Verde.

Palo Verde Site-Level Logic Model

Palo Verde's logic model, below, outlines how the program's strengths and strategies will result in realizing the project's goals of improving integration and decreasing minority isolation, improving student achievement, decreasing achievement gaps among students, creating a sustainable program that has enduring community partnerships, and offering rigorous STEAM practices that challenge students to become problem solvers.

Inputs	Outputs	Outcome

Resources What we invest. • Staff • Volunteers • Time • Partners	**Activities** What we do. • Conduct workshops • Develop curriculum • Train, Assess, Partner, Facilitate	**Short-term outcomes** • Learning • Awareness • Knowledge • Skills	**Medium-term outcomes** • Action • Behavior • Practice • Policies	**Long-term outcomes/Impact** • Conditions • Social • Environmental
• Staff and students with diverse perspectives, backgrounds, and abilities • Diverse members of the school community, including teachers, staff, students, parents, administrators	• School-wide cross-curricular and cross-grade level implementation initiatives, including STEAM practices, systems thinking, PBL, and collaborative learning environment • Fluid intervention and enrichment opportunities based on formative and summative assessment and analysis • Emphasis on academic vocabulary	Identify cross-school networks to share, discuss, and understand best practices	Equal access for all students achieved by implementing strategies to increase inter-group interaction	Decreased magnet minority student isolation
		Define rigorous learning opportunities to meet the needs of all	Magnet schools reach program capacity	Increased percent of magnet students achieving proficiency on State of Arizona

• Teachers committed to providing instructional strategies that embed rigorous STEAM practices in cross-curricular units through active project-based and/or collaborative learning and systems thinking • Inclusive student selection process aimed at reducing minority	• Provide 9-12 vertical articulation of theme • PLCs using district frameworks and rubrics, including facilitation training • Coaching and mentoring • Professional development • Augment facilities and resources that support STEAM, PBL, and systems thinking • Transportation provided for in-district magnet students • Inclusive access to technology • Weighted lottery practice for sibling placement • Provide rigorous programs and innovative course offerings	students		and TUSD benchmark ELA and math assessments
		Recognize engaging instructional strategies	Student achievement will improve	Program becomes sustainable
		Understand how to structure and run successful PLCs, facilitated by an appointed site staff member	Increased magnet schools inclusivity and diversity	Increased achievement, including closing achievement gaps between ethnicities and genders
		Understand systems thinking and project and problem-based learning		

isolation • PLCs that examine student achievement in relation to instruction, intervention, and enrichment • Opportunities for teachers and support staff to engage in vertical and horizontal data analysis and planning • School culture that embraces diversity and academic depth	• Collaborate with district communication department in aggressive marketing and recruitment campaigns using best practices • Outreach to families and community at recruitment events • Targeted recruitment that contributes to school-wide integration • Unit development aligned to district quarterly curriculum standards • Create and use formative assessments to drive instruction • Student data review in PLCs • School-wide data review • Use of common	Recognize model STEAM practices and how to integrate them into district curriculum	Achieved capacity and sustainability of foundational STEAM, PBL, and systems thinking practices by pairing site mentors with new teachers	Increased percent of magnet student achieving proficiency on ELA and math assessments
		Incorporate systems thinking, PBL, and collaborative learning into STEAM lesson/unit development as appropriate	Incorporated differentiated learning into the culture of the school for both students and teachers	Students are able to identify problems, generate questions, and propose solutions by using the habits of a systems thinker and STEAM

of knowledge • Cultural awareness and funds of knowledge of students and adults • Professional knowledge of school improvement practices to reduce or eliminate achievement gaps • Partnerships that create program sustainability	formative assessment to guide unit development and intervention opportunities • Utilize co-teaching model for Exceptional Education students when appropriate • Ongoing professional development in culturally competent practices • STEAM practices embedded in all curriculum • Project and/or problem-based learning is a component of all courses • Family engagement activities • Before/after-school opportunities for STEAM enrichment and academic intervention		Ongoing professional development aligned according to site need	practices
			Protocol developed for data talks, including administrator to teacher, teacher to teacher, teacher to student, teacher to parent	
			STEAM practices are integrated into district curriculum	

	• Reflective review of unit and lesson plans by colleagues using feedback protocols			
		Identify potential community partnerships	Develop and strengthen community partnerships	Sustained community partnerships

Palo Verde Magnet High School

In 2011, Palo Verde became a Turn-Around school. Fifty percent of the staff was retained. Due to the Turn-Around status, the student population dropped to approximately 950 students. At that time, 60 percent of the teachers had three years or less of teaching experience. Emphasis was placed on improving school climate and culture, improving academic success for each student, promoting student diversity, implementing a guaranteed and viable curriculum, and establishing effective instructional practices. Since that time, Palo Verde has attracted several district, state, and nationally recognized and accredited teachers. Palo Verde has increased the number of rigorous college-level coursework in areas such as engineering, chemistry, drafting, and physics. Palo Verde also currently offers 12 AP courses in science, English, history, and art. The engineering department has increased opportunities for students by adding nine new sections for the 2016-2017 school year. Since 2011, the number of physics students at the school has increased from 30 to 140. Enrollment in technology courses has doubled. Student population continues to increase and remains integrated in comparison to the district averages. There is a

campus commitment to continually grow the opportunities for students to take AP courses, as the magnet program at Palo Verde attracts more students.

Evidence of the shift in the school's climate and culture can be observed in working PLCs that are focused on creating school-wide STEAM practices through Global Goals as interdisciplinary units and technical writing that supports the scientific practices. There has been a move from department meetings to interdisciplinary staff collaboration. Beyond PLC work, teachers have built community partnerships with groups and institutions such as Biosphere 2, Rotary Club, Industrial Took and Die Engineering, Dataforth Engineering, and Pima Community College. Student learning is measured by teacher created pre-tests, end-of-course assessments, performance-based assessments, and district and state assessments. According to district benchmark data, Palo Verde is showing school-wide academic growth in reading and writing. Palo Verde also shows the second highest level of growth of the high schools in Tucson Unified.

The educational plan at Palo Verde incorporates excellent faculty and staff who serve as models of life-long learning, high standards and expectations for student achievement, innovative teaching strategies, rigorous student assessment and a commitment to continuous improvement, a vast array of enrichment opportunities, access to cutting-edge technology, an extensive after-school program, and strong community partnerships. Palo Verde's emphasis on STEAM with a foundation in literacy aligns with the STEM practices framework used at the elementary and middle school levels. With a national need for STEM-related jobs, Palo Verde teachers understand that the challenges their students face within these jobs will demand creative solutions. STEM careers demand innovation. Innovation happens when convergent thinkers combine with divergent thinkers. Palo Verde deems it essential that art thinking, which leads to divergent thinkers, be added to STEM, creating a STEAM theme. By infusing these areas of

curriculum into the school as a whole, Palo Verde is working diligently to give students the opportunity to compete in a global world.

The teachers at Palo Verde have made a school-wide commitment to move from using traditional teaching practices to using PBL and integrating the habits of thinking needed in science, technology, engineering, art, and mathematics. Currently, the magnet teachers use a project-based curriculum. The students have requested that this kind of learning take place in all courses. Professional development is needed to make this commitment a reality. Teachers need to develop an understanding of what PBL is, how systems thinking can provide structure for beginning a project, and how to engage their students in deeper learning using a collaborative approach. Teachers will need time and training to integrate these practices with the District's curriculum and create units of study.

Palo Verde is working collaboratively in departmental PLCs as well as interdisciplinary PLCs, which include teachers in STEAM disciplines. Palo Verde's job-embedded work is focused on creating self-directed teams that strive for continuous improvement in the effectiveness of teaching, implementing research-based strategies and resources to integrate the STEAM magnet theme, and setting specific measurable goals to monitor the affects on student achievement. Ongoing collaboration in support of learning is essential for the implementation of the STEAM theme and practices in every classroom.

Tucson High Site-Level Logic Model

As described in the logic model below, Tucson High will offer a school community with diverse perspectives and backgrounds, committed teachers and staff, an inclusive student selection process, PLCs, and other strengths and strategies to achieve the project's goals, including reduced minority isolation, increased student achievement and decreased achievement

gaps, rigorous STEM practices integrated into the District curriculum, and a program that is sustainable without federal funding.

Inputs	**Outputs**	**Outcome**		
Resources What we invest. • Staff • Volunteers • Time • Partners	**Activities** What we do. • Conduct workshops • Develop curriculum • Train, Assess, Partner, Facilitate	**Short-term outcomes** • Learning • Awareness • Knowledge • Skills	**Medium-term outcomes** • Action • Behavior • Practice • Policies	**Long-term outcomes/Impact** • Conditions • Social • Environmental
• Staff and students with diverse perspectives, backgrounds, and abilities • Diverse members of the school community, including teachers, staff,	• Cross-curricular and cross-grade level implementation initiatives, including STEM practices, systems thinking, PBL, and collaborative learning environment • Fluid intervention and enrichment opportunities based on formative and summative assessment	Identify cross-school networks to share, discuss, and understand best practices	Equal access for all students achieved by implementing strategies to increase inter-group interaction	Decreased magnet minority student isolation
		Define rigorous learning opportunities	Magnet schools reach program capacity	Increased percent of magnet students achieving

students, parents, administrators • Teachers committed to providing instructional strategies that embed rigorous STEM practices in cross-curricular units through active project-based and/or collaborative learning and systems thinking • Inclusive student	and analysis • Emphasis on academic vocabulary • Provide K-12 vertical articulation of theme • PLCs using district frameworks and rubrics, including facilitation training • Coaching and mentoring • Professional development • Augment facilities and resources that support STEM/STEAM, PBL, and systems thinking • Transportation provided for in-district magnet students • Inclusive access to technology • Weighted lottery practice	to meet the needs of all students		proficiency on State of Arizona and TUSD benchmark ELA and math assessments
		Recognize engaging instructional strategies.	Lower performing schools become higher performing schools	Program becomes sustainable
		Understand how to structure and run successful PLCs, facilitated by an appointed site staff member	Increased magnet schools inclusivity and diversity	Increased achievement, including closing achievement gaps between ethnicities and genders
		Understand systems		

selection process aimed at reducing minority isolation • PLCs that examine student achievement in relation to instruction, intervention, and enrichment • Opportunities for teachers and support staff to engage in vertical and horizontal data analysis and	for sibling placement • Provide rigorous programs and innovative course offerings • Collaborate with district communication department in aggressive marketing and recruitment campaigns using best practices • Outreach to families and community at recruitment events • Targeted recruitment that contributes to school-wide integration • Unit development aligned to district quarterly curriculum standards • Create and use formative assessments to drive	thinking and project- and problem-based learning		
		Recognize model STEM practices and how to integrate them into district curriculum	Achieved capacity and sustainability of foundational STEM, PBL, systems thinking practices by pairing site mentors with new teachers	Increased percent of magnet student achieving proficiency on ELA and math assessments
		Incorporate systems thinking, PBL, and collaborative learning into STEM unit development	Incorporated differentiated learning into the culture of the school for both students and teachers	Students are able to identify problems, generate questions, and propose solutions by using the habits of a

planning • School culture that embraces diversity and academic depth of knowledge • Cultural awareness and funds of knowledge of students and adults • Professional knowledge of school improvement practices to reduce or eliminate achievement gaps	instruction • Student data review in PLCs • School-wide data review • Use of common formative assessment to guide unit development and intervention opportunities • Utilize co-teaching model for Exceptional Education students when appropriate • Ongoing professional development in culturally competent practices • STEM practices embedded in all curriculum • Project and/or problem-based learning is a component of all courses	as appropriate		systems thinker and STEM practices
			Ongoing professional development aligned according to site need	
			Protocol developed for data talks, including administrator to teacher, teacher to teacher, teacher to student, teacher to parent	
			STEM/STEAM practices are integrated into	

• Partnerships that create program sustainability	• Family engagement activities • Before/after-school opportunities for STEM/STEAM enrichment and academic intervention • Reflective review of unit and lesson plans by colleagues using feedback protocols		district curriculum	
		Identify potential community partnerships	Develop and strengthen community partnerships	Sustained community partnerships

Tucson High Magnet School

Situated across the street from the University of Arizona, Tucson High has a long history of programs and course offerings that fuel students' imaginations, challenge their thinking, and support them as they strive to meet rigorous academic requirements. A diverse student population gravitates to the Tucson High program to take advantage of everything from the biotechnology and award-winning science research program to nationally recognized performing and fine arts programs in theater, photography, and dance. The combination provides a rich

experience that fuels student creativity and develops critical thinking and communication skills, enabling students to excel in STEM projects and compete successfully at national and international science and engineering competitions. The Tucson High infrastructure, which includes a molecular laboratory, greenhouse, sustainability lab, garden, and aquaponics system, gives students the chance to explore systems thinking and project-based learning in biology, chemistry, plant sciences, marine biology, and environmental sciences, while after-school programs offer students the opportunity to pursue engineering, STEM activities, sustainable agriculture, and healthy lifestyles. Tucson High STEM teachers have ongoing relationships with many outreach programs, including but not limited to UA College of Science and College of Plant Sciences research labs, the UA School of Geography and Development, WISE, the UA's Community and School Garden Project, the Pima County Cooperative Extension, and the Arizona Sonoran Desert Museum.

Two Tucson High summer STEM programs develop student—and reinvigorate teacher—passion for science by immersing students and teachers in PBL. Science and Nature in Tandem for Youth (SANITY), now in its 11th year, introduces students to the process of science while exploring field biology techniques at the Southwestern Research Station in Portal, Arizona. Biotechnology Lab for Arizona Students and Teachers (BLAST), supported through NSF funding to partnering UA research labs, offers the opportunity for students to explore microbiology and modern molecular techniques in the context of original research.

The established STEM resources and programs make Tucson High an excellent fit for the MSAP grant. The district has worked hard over the past several years to revise its curriculum to compliment AZCCRS. While the district curriculum is rigorous and updated, Tucson High seeks to continue its role in offering innovative science curriculum. Tucson High faculty will benefit

from professional development in PBL and systems thinking, building research skills and problem-solving habits of mind into every classroom. The curriculum will build on these skills each year so that juniors and seniors can readily participate in student-directed research and in outreach in support of students and teachers at Borton and Mansfeld. Implementation of the grant will include upgrading technology access for all students, creating more opportunities for teacher professional development, and training Tucson High students to support STEM projects at Borton and Mansfeld.

To ensure student access to technology, a class set of laptops are needed in every science classroom, and each classroom needs two routers to provide adequate capacity for wireless. In addition, funds will support introductory-level biotechnology through the Biotech Project at the UA, giving every biology student exposure to DNA extraction and simple analysis. Environmental chambers and appropriate probeware for measuring conditions will enhance PBL in biology. A 3-D projector will enhance design and visualization of spatial relationships for physics students engaged in problem solving.

To support the STEM mission, funding is needed to train teachers in PBL through the Buck Institute of Education and in systems thinking through the Waters Foundation. Additionally, all teachers and students would be trained in the use of online teaching platforms to enhance communication with, and support of, students. Funds also will be used to support projects in citizen science, utilizing the resources at Tucson High to support projects at Borton and Mansfeld. STEM experts, advanced students with strong research skills, will visit the other sites on a regular basis, supporting ongoing PBL activities. For example, BioBlitz surveys on any campus could be enhanced with DNA barcoding by the Tucson High biotech classes of plant, insect, and microbial species documented.

Continued support of the UA Green Academy is necessary to maintain and develop sustainability curriculum connected to the garden and sustainability lab. A vision to support all Tucson Unified's school gardens with starts and seeds grown by Tucson High students requires improvements to the onsite greenhouse, which includes an air conditioning unit and mist-bench materials to grow cuttings from Father Kino Heritage Fruit trees. Connecting students in the STEM pipeline also requires transportation to other schools and offsite labs; two dedicated mini buses for the Borton-Mansfeld-Tucson High STEM pipeline will greatly facilitate student and faculty exchanges between campuses within the STEM pipeline.

A. Reducing Minority Group Isolation and Improving Academic Achievement with Multicultural Curriculum Reform

There are several perceptions as to what constitutes multicultural curriculum reform. All magnet schools will be responsible for the development of curriculum that includes social awareness and action conceptualizations. Cultural competency is the ability to work effectively across cultures. For individuals, it is an approach to learning, communicating, and working respectfully with people different from themselves. Culture can refer to an individual's race, class, gender, sexual orientation, religion, immigration status and age, among other things. For organizations, cultural competency means creating the practices and policies that will make services more accessible to diverse populations and that provide for appropriate and effective services in cross-cultural situations. Based on the work of Banks (1993) and McIntosh (2000), when the voices, ideas, and perspectives of the students regarding these and all other topics are brought to the forefront in the learning experiences, the students themselves become a multicultural classroom resource. This approach complements a PBL environment. Students will gain a greater understanding of differing viewpoints as they work on a project through rich

discussions of topic, methodology, and presentation. Using this approach, students will take action and make decisions concerning the concepts, issues, or problems related to the inquiry-based pedagogy.

In a recent column in the Huffington Post, "Why Good Schools Are Happy Places," (2016) Carrie Brennan, executive director of the CITY Center for Collaborative Learning & Public Voices Project, described the importance of a positive school culture: "In environments where safety, trust, and relationships are valued, students are more likely to be focused on their learning, to take risks, and to challenge themselves. Schools with a healthy school culture tend to be mission-focused schools with a shared sense of purpose." By providing intensive professional development, collaborative support for planning and teaching, and ongoing professional learning experiences for all faculty and staff, climate and culture will be strengthened in concert with classroom instruction. The District's USP, which became effective in 2013, charges the district to develop and train teachers and administrators in cultural competency. The USP states: "The trainings shall focus on learner-based approaches that emphasize students' cultural assets, backgrounds, and individual strengths." (USP, pg.36)

All magnet schools in this proposal will participate in this training. In addition, each magnet school will participate in a school-wide study using *C.A.R.E. Guide: Strategies for Closing Achievement Gaps* (NEA Guide for Educators). This training emphasizes raising achievement for all students while assuring that steps are taken to serve traditionally under-achieving groups of students and close the achievement gap. The 2011 edition of the C.A.R.E. Guide contains student activities, lesson plans, teaching strategies, educator reflection opportunities, and video clips of experts sharing research and practice tips for educating culturally diverse students and students from low-income families. *C.A.R.E.: Strategies for Closing the Achievement Gaps* offers

strategies for improving the learning experiences of diverse students, especially those who are struggling to achieve at high levels. It focuses on four factors that affect student achievement: Culture, Abilities, Resilience, and Effort (C.A.R.E.).

B. Tucson Unified will improve student academic achievement for all students attending each magnet school program.

The performance measures in determining academic achievement success for the schools involved in this grant will mirror the rigorous goals found in the District's Comprehensive Magnet Plan (CMP). According to this plan, all magnet schools in the District must attain five goals related to academic performance by the end of the 2016-17 school year. These goals have been approved by the court, plaintiffs, and Governing Board:

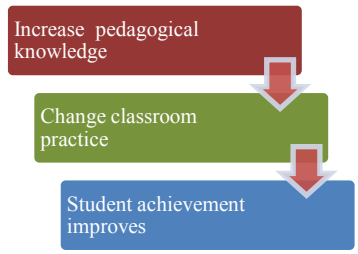
- Each magnet school receives a state letter grade of A or B.
- Students attending a magnet school score higher than the state median in reading and math on the state assessment.
- Academic growth of all students in a magnet school is higher than the state median growth in reading and math.
- The growth for students in the "lower 25%" at the magnet school is higher than the state median.
- Achievement gaps between ethnic groups for students enrolled in a magnet program are less than that for Tucson Unified students not participating in a magnet program.

Systematic and well-planned implementation of the STEM pipeline must take into careful consideration the above achievement goals. Years of research has illustrated that what happens between teachers and students in our nation's classrooms has the greatest impact on how well students learn. In the educational arena, virtually every initiative available has been tried. New

programs, restructured schools, realigned organizational charts, and millions of dollars have been spent on quick fixes. Again and again, the essential element found to consistently increase student achievement has been high quality instruction. In order to be high quality, instruction must be guided by rigorous, research-based curriculum that is engaging and exciting, as well as continually assessed to guide instruction and flexible student grouping.

Students placed with highly performing teachers progress three times as fast as those placed with low performing teachers (McKinsey, 2007). Professional development in MSAP schools will emphasize improving and building teacher skills that contribute to outstanding classroom practice (see Figure 2). An indicator of student success will be the delivery of a rigorous, challenging, and engaging curriculum that embeds STEM practices through active, high quality instruction.

Figure 2. Effective Teacher Training



C. Improving Academic Achievement with Instructional Practice Committed to Cognitive Rigor

At the core of this proposal is the implementation of a STEM pipeline dedicated to providing rigorous academic programs for all students. According to Francis (2016), in cognitively rigorous programs students are expected to communicate and demonstrate their knowledge acquisition deeply and extensively: "Cognitive rigor challenges and engages students to express and share their deeper knowledge and thinking both concretely and abstractly through description, discussion, and design" (http://www.maverikeducation.com/). MSAP schools included in this proposal are committed to establishing and sustaining a culture of cognitive rigor for all students in the K-12 STEM pipeline.

To accomplish this, a school improvement model will be instituted and complemented using the STEM Immersion Matrix developed by the Science Foundation of Arizona. This implementation model guides STEM development in four stages: exploratory immersion, introductory immersion, partial immersion, and full immersion.

1. Exploratory Immersion Stage

All four MSAP STEM schools have moved beyond this stage of programmatic implementation, in both current commitment level and philosophy. In this stage of STEM development, a traditional school experience is offered, with STEM opportunities appearing mostly outside of the regular school day. All four MSAP STEM schools have extracurricular activities that involve STEM, including: Robotics Club, Engineering Club, Science Olympiad, GIS Mapping, and SANITY (Science and Nature in Tandem for Youth). At this immersion stage, there is also typically a requirement for science fair projects. None of the programs require science fair projects, though a few classes at the high school level encourage them. All four MSAP STEM schools hold the philosophy that science education requires attention to detail and process more than the completion of a terminal project. Also at the exploratory stage, student participation in STEM learning is optional.

This stage of immersion will focus on baseline teacher training in PBL, systems thinking, and STEM practices. All magnet teachers will utilize the Essential Elements of Instructional (EEI) decision-making model. This is a model required for use by all teachers within the District that focuses on the delivery of high quality instruction as well as content and curriculum knowledge.

MSAP schools will also offer professional development on theme-related topics. Areas of study will include defining STEM principles and practices that can be carried through the pipeline; familiarization with model STEM programs; a plan of action and beginning efforts in

infusing STEM into the District curriculum; and increasing teacher knowledge and comfort levels in project-based and collaborative learning. Professional development also will include sessions on organizing and running a productive and successful PLC. The District has developed a Professional Learning Communities Guide and rubric that will be used to structure this professional development. During the first year of the grant, teams will be provided with regular supervision and guidance during PLCs by each site's magnet coordinator (or another appointed and trained staff member).

2. Introductory Immersion Stage

This is the stage in which varying levels of comfort and implementation begin to appear between MSAP STEM teachers. Teachers at this stage implement the standard curriculum and may supplement with STEM-related activities. Students at this stage are required to participate in some STEM learning during the school day. The teacher may pose and direct authentic problems.

More than half of the instruction found within the four MSAP STEM classrooms will fall into this stage of immersion. This grant will support learner-centered professional development, which tailors teacher professional development according to teacher need and belief about what is most relevant in their classroom. This does not entirely eliminate the importance of group professional development experiences, but goes beyond in offering training that supports the needs of the individual in achieving professional growth. Learner-centered design principals identified by Hawley and Valli (2000) include:

- The content of professional development focuses on what students are to learn and how to address the different problems students may have in learning that material.

- Professional development should be driven by analyses of the differences between (a) goals and standards for student learning, and (b) student performance.
- Professional development should involve teachers in the identification of what they need to learn and, when possible, in the development of the learning opportunity and/or the process to be used.
- Professional development should be primarily school based and integral to school operations.
- Professional development should provide learning opportunities that relate to individual needs but are, for the most part, organized around collaborative problem solving.
- Professional development should be continuous and ongoing, involving follow-up and support for further learning, including support from sources external to the school that can provide necessary resources and outside perspectives.
- Professional development should incorporate evaluation of multiple sources of information on outcomes for students and processes that are involved in implementing the lessons learned through professional development.
- Professional development should provide opportunities to engage in developing a theoretical understanding of the knowledge and skills to be learned.
- Professional development should be integrated with a comprehensive change process that addresses impediments to and facilitators of student learning.

Research indicates that structure and guidance is needed during initial implementation of learner-centered professional development. Staff from all four MSAP STEM have committed to training in PBL and systems thinking. This training will be offered by the Buck Institute and the

Waters Foundation, which provide different levels of professional development based on previous training and teacher interest. While this professional development does not engage all nine principals of the learner-centered model, it is a beginning step that offers teachers support while they build and expand their knowledge base.

3. Partial Immersion Stage

Some teachers within the MSAP STEM pipeline fall into the partial immersion stage of STEM development. At this stage, students can expect a non-traditional school experience. Classroom learning incorporates STEM-related experiences, which are integrated into the curriculum. At this point in the immersion cycle, teachers assume a more facilitative role and guide students through project-based investigations that have been generated either by students or teachers.

Professional development will continue based on each teacher's areas of need and concentration. Classroom units will be developed using STEM practices, emphasizing a project-based and/or cooperative learning approach when appropriate. PLCs will continue, with intervention and enrichment opportunities becoming more fluid as teachers gain comfort and clarity in assessing student progress. PLC leaders will receive training on leadership and facilitation by the district or an outside consultant. Student data will be reviewed in collaboration, and will include:

- Using teacher-to-teacher analysis (both vertically and horizontally).
- Conducting quarterly (at a minimum) teacher-to-student review, reflections, and goal setting.
- Conducting school-wide data analysis to detect trends and revise or adjust school-wide instruction and intervention.

- Offering teacher-to-parent conferences and progress reporting using an adapted version of the Academic Parent Teacher Teams, a program developed by WestEd. The Magnet Parent Teacher Teams (MPTT) program is an innovative, research-based method to increase parent involvement and raise student achievement in math and reading. The purpose of the program is to develop, support, and sustain effective parent engagement. The magnet coordinator or parent liaison in each school will coordinate and implement the MPTT at the site level.

To ensure that teachers new to a campus are well familiarized with each site's culture of cognitive rigor, on-site mentors will be established. These mentors will be selected by site administrators according to interest and instructional prowess. Mentors will be charged with assisting new teachers as they build foundational knowledge of STEM practices. In addition, they will assist new teachers in understanding processes and protocols involved in PLC participation, including an emphasis on high quality instruction, analysis of student learning, and project-based and/or cooperative learning. These steps will help provide program stability and assist new staff members in making a smooth transition into the STEM pipeline.

4. Full Immersion Stage

Full immersion will occur during the third year of the MSAP grant and continue beyond the grant cycle. The STEM Immersion Guide defines full immersion as a "non-traditional school experience where STEM-related experiences drive and determine the curriculum." At this stage, students are cooperating to solve authentic problems. They propose solutions and contribute ideas to the larger community. The teacher ensures that curriculum is STEM-related and acts as a facilitator for student projects.

Professional development will continue and include the learner-centered model to develop each teacher's skill level according to their needs and interests in STEM. Mentoring will continue to be provided for new teachers entering the pipeline as they move through the immersion process. During PLCs, established practices will be continued and leadership will be shared. Teachers will be expected to think systematically about their practice while analyzing student progress. Lessons will incorporate STEM practices using a project-based and/or cooperative approach. At this stage, all learning will be documented, taught, assessed, and revised as needed to keep the content of theme viable, fresh, and relevant. Students will be provided with fluid enrichment and intervention opportunities.

Magnet schools in this proposal will utilize a variety of assessment tools. Varied assessment techniques will be used to determine if students are meeting the intended outcomes of intentionally designed lessons. Portfolios may be used as one assessment tool. Learning logs, in which students reflect on learning, criterion-based assessments, and standardized assessments are also options. Teachers will determine which type of assessment best suits content and methodology during PLCs. Common formative assessments will be created during PLC time; when a class is unique, formatives that measure performance standards will be discussed with PLC team members prior to assessment administration. To gain a broader understanding of a student's academic achievement, a variety of records of student work will be maintained. This work will allow students to reflect on their growth as well as provide a record of increased abilities and skills. All students will be responsible for keeping a record of their own data for use during data chats, with each site determining the method of this record keeping.

Rosenholtz (1989) linked the notion of teachers' workplace factors with the discussion of teaching quality, maintaining that teachers who felt supported in their own ongoing learning and

classroom practices were more committed and effective than those who did not receive such confirmation. Support through teacher networks, cooperation among colleagues, and expanded professional and leadership roles increased teacher efficacy in meeting students' needs. Further, Rosenholtz found that teachers with a high sense of their own efficacy were more likely to adopt new classroom behaviors and stay in the profession. McLaughlin and Talbert (1993) confirmed Rosenholtz's findings, suggesting that when teachers had opportunities for collaborative inquiry and the learning related to it, they were able to develop and share a body of wisdom gleaned from their experience. Adding to the discussion, Darling-Hammond (1996) cited shared decision making as a factor in curriculum reform and the transformation of teaching roles in some schools. In such schools, structured time was provided for teachers to work together in planning instruction, observing each other's classrooms, and sharing feedback. These are the very attributes that characterize PLCs—collaborative inquiry, shared decision making, and joint planning of instruction. Teachers will receive training in the attributes of a PLC: supportive and shared leadership, collective creativity, shared values and vision, supportive conditions, and shared personal practice. Over the three years of the MSAP grant, PLC teams will progress from having a non-team member assist in guiding team progress to a model of shared leadership.

Mansfeld, Palo Verde, and Tucson High will be charged with showing an annual increase in the number of magnet-related advanced learning experiences available to students, including AP courses, high-school credit for middle schoolers, and dual-enrollment college classes for high school students. Borton will be asked to provide evidence of an increase in STEM enrichment activities at each grade level each year.

Working collaboratively with school staff and families, all students enrolled in the magnet programs who receive exceptional education services will have an individualized

education plan. The team will meet with each family to determine current skill and knowledge levels, health concerns, and student interests. This information will be compiled and used to design a learning plan that meets the students at their level and moves them forward by setting specific performance goals. The plan is reviewed and updated as students progress through educational programs. Exceptional Education students will participate in rigorous academic coursework and will be held to high standards of academic achievement.

Each magnet will offer extended-day programs, which will include both academic intervention and academic enrichment. Using peer-tutoring, student mentors, and academic tutors, struggling students will receive targeted intervention. The proposed magnets will provide developmental supports that create a personalized learning environment and community for every student. In addition, all students will have access to clubs and extracurricular activities that relate to the magnet theme. Clubs also will be formed to address students' special interests. All clubs and extracurricular activities will be structured to be multiage and monitored to ensure diversity.

D. Tucson Unified will encourage greater parental decision making and involvement.

Tucson Unified magnet programs have a long history of successful parental involvement. With the USP initiative of creating comprehensive family centers to disseminate information, families now have greater knowledge of the multiple options for their child's education. With the implementation of the court-ordered family centers, parents in the Tucson Unified magnet schools will have multiple opportunities to be involved in their child's education.

The STEM pipeline magnets will utilize a number of other family engagement strategies:

- Parents will receive multiple communications about community events through web-sites, Twitter, mailers, letters, and auto-phone calls.

- Parents will be encouraged to volunteer in classrooms, attend field trips, and attend presentations and exhibitions.
- Parents will be sought out as resident experts in specific skills or talents and trained to give presentations and workshops to other parents.
- Parents will be encouraged to hold home-based study groups with the support of the parent liaison.
- Parents will be encouraged to recruit other parents by participating in public presentations and provide testimonials as to the successes of the magnet.
- Parent liaisons will work with parents to help them explore school choice options.
- Parents will be encouraged to attend teacher professional development opportunities to stay informed about new strategies and ideas for supporting their child's academic achievement.
- Magnet leadership teams will include at least one parent representative and one community representative.
- MPTTs will be established.

These activities comprehensively address the six types of involvement indicated as keys to successful partnerships by the National Network of Partnership Schools, John's Hopkins University (Epstein, 2004). These include parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community. Magnet coordinators at each STEM pipeline school will be asked to include in their annual report a listing of family engagement events according to type to ensure the maximum benefit for students at each campus.

QUALITY OF MANAGEMENT PLAN

(1) Tucson Unified has a management plan that will allow for the successful achievement of project objectives.

This project was designed with the intention of accomplishing specific outcomes. These outcomes are directly aligned with the STEM pipeline priorities. The project outcomes will be: 1) decreased magnet minority student isolation; 2) the implementation of rigorous STEM practices that complement and build upon the District curriculum; 3) improved student achievement as measured by the percent of magnet students achieving proficiency on State of Arizona ELA and math assessments; 4) decreased achievement gaps between ethnicities and genders; 5) increased parent and community involvement; and 6) increased technological capacity. All outcomes were strategically chosen with the long-term goal of sustaining high performing STEM magnet schools after federal funding ends.

Each level of program management is nested within the next level to ensure full attainment of the project outcomes. All levels surround the classroom with continuous support. Direct support for the classroom will come from the Site MSAP Leadership Team. Site-level teams will be supported by the District's MSAP Leadership Team. The classroom, school, and district will solicit involvement, input, and support from the community. All levels will be involved in programmatic decision making to attain the project outcomes.

A timeline of MSAP STEM pipeline activities may be found below (Table 8). This timeline includes major phases of professional development, Professional Learning Community (PLC) implementation, and classroom instruction. More details regarding each of these may be found in the Quality of Program Design section. Please note that some activities occur during the entirety of the grant cycle, while others show a progression over time.

Table 8. Timeline for MSAP STEM Pipeline Grant Implementation

(2) Fiscal and Administrative Responsibilities

The MSAP grant will expand the programmatic capacity of Borton Magnet Elementary School, Mansfeld STEM Magnet Middle School, Palo Verde Magnet High School, and Tucson High Magnet School while maintaining fidelity to each program's court-approved Magnet

School Plan. District-level budgeting for each of the four schools will not be depleted as a result of MSAP grant funding.

To ensure proper and efficient administration and project monitoring, Tucson Unified has created a MSAP Grant Implementation Model to provide continuous support during the grant cycle and beyond. Diverse and strong partnerships form an important part of this model. Many partners that have already committed to these four schools provide valuable community input and resources. They expose students to a larger variety of experiences as well as subject-level expertise that goes beyond that available in many classrooms.

A broad range of additional community partnerships will be sought to expand the current pool of partners. Partnerships will be nurtured so that these assets will extend beyond the period of federal financial assistance. These relationships will provide valuable resources such as people, funding, materials, and ideas. National and local businesses and organizations, community members, and parents will participate. The community will work closely with all levels of program management, particularly the Site MSAP Leadership Team and teachers.

Leadership at all levels within the Tucson Unified community also is integral to accomplishing the project's objectives (Figure 3). Key personnel have been identified to serve on the District MSAP Leadership Team. Core team members will include the senior director of Desegregation, the director of Advanced Learning Experiences and Magnet Programs, the senior magnet program coordinator, and an internal evaluator. MSAP magnet programs also will be represented at the district level by the principal and the site magnet coordinator. In addition, the assistant superintendent of Curriculum and Innovation, an administrative assistant, legal counsel, and external evaluator will provide support as needed. The District MSAP Leadership Team will ensure that MSAP compliance guidelines are followed both at the district and site levels. Team

meetings will be held at least once a month to review progress, leverage District-level support for each campus as needed, and make recommendations for Site MSAP Leadership Teams. This frequent monitoring by the District MSAP Leadership Team will allow for creative problem solving, should challenges arise.

District resources will support the grant activity efforts. Key stakeholder departments include Curriculum and Professional Development, Language Acquisition, Title I, Parent and Family Resources, Student Equity, Desegregation Department, Community Services (enrollment), McKinney Vento, Counseling, Elementary Leadership, Secondary Leadership, Transportation, Operations, Human Resources, and Finance. These departments will be solicited for assistance and resources as needed in order to leverage maximum support for the STEM pipeline schools.

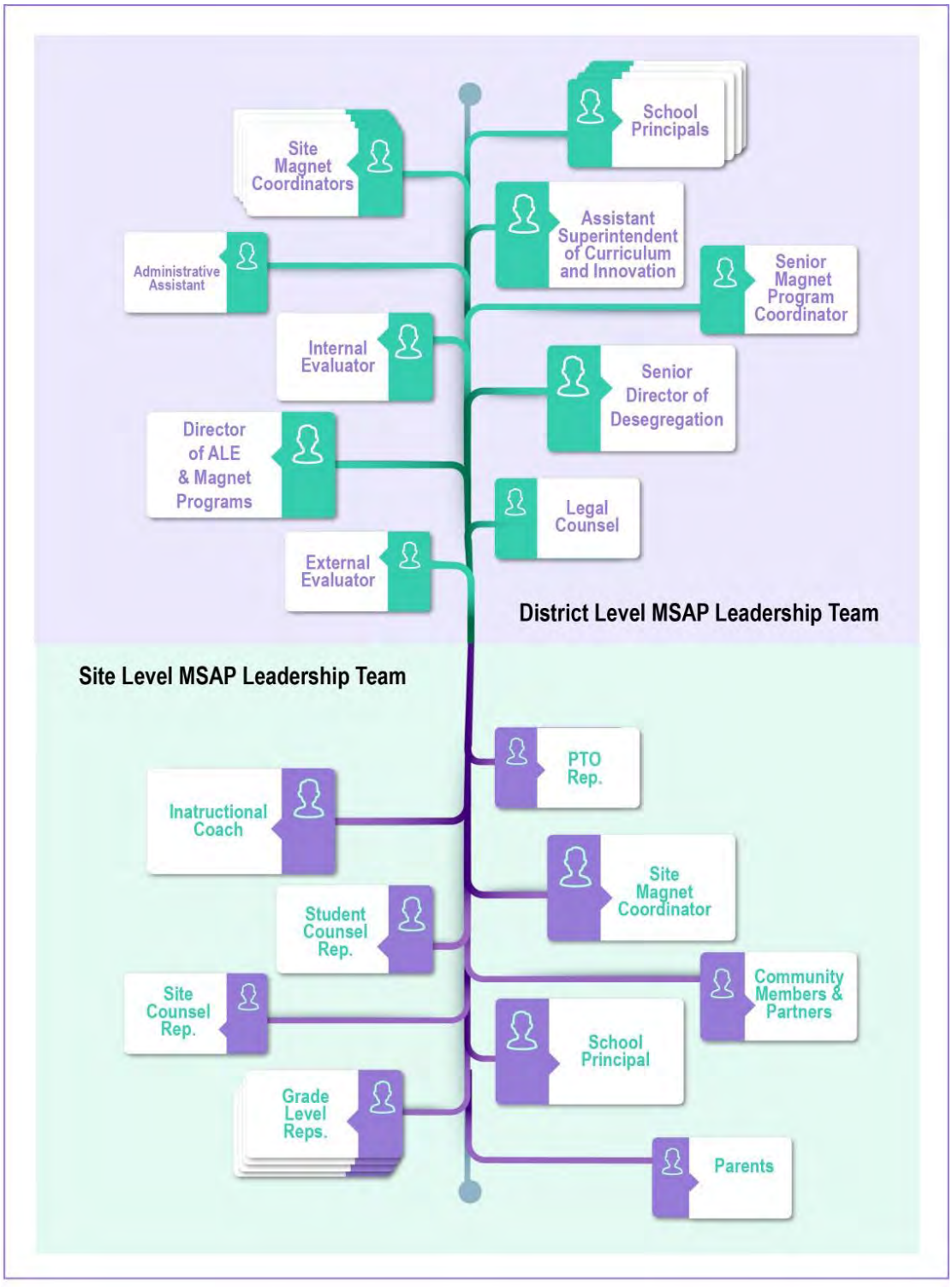
Each MSAP campus will work to develop teachers as leaders. Through MSAP support, each of the four magnet schools will establish or maintain Site MSAP Leadership Teams. Magnet coordinators will be an active part of each site's magnet leadership team and may lead the teams if appointed by the site administrator. These site-level magnet teams will help support classroom implementation of magnet themes and training with walk-throughs and modeling opportunities. As leadership is gradually shared, magnet leadership team members will become increasingly involved in decision making concerning teacher collaboration; theme-related issues, including implementation, instruction, and assessment; climate and culture; and the identification of additional partners. Magnet leadership teams will include at least one parent representative and one community representative who will oversee, monitor, and/or connect on an ongoing basis with this group. Progress and implementation of the magnet will be shared transparently

with all members of the team. Team members will have equal decision-making power, except on occasions in which the principal is the decision maker.

The Site MSAP Leadership Team assembled at each campus will meet biweekly and will include the principal (or administrative designee), magnet coordinator, instructional coach, and grade-level representatives. Regular representation will be solicited from community members, partners, and parents. Each site's Student Council, Parent Teacher Organization, and Site Council will receive meeting minutes and may elect to send representatives to Site MSAP Leadership meetings as needed.

The Site MSAP Leadership Teams will monitor program implementation, budgets, and personnel. The STEM Immersion Guide for Schools and Districts will help guide goal setting and the progress of magnet-theme development and expansion. This matrix includes indicators for program progression and is broken down into six operational components: leading, teaching, learning, evaluating, budgeting, and sustaining. Opportunities for professional development at each school and within the STEM pipeline will be planned and executed. The Site MSAP Leadership Team will create lines of communication among all management levels in order to report progress towards meeting project goals to all stakeholders. Progress will be formally reported to the District MSAP Leadership Team and campus stakeholders once a month.

Figure 3. MSAP Leadership Team Model – District and Site



This plan will implement high-quality program activities that increase parent involvement at each school, especially efforts related to increasing student achievement. These activities will be coordinated with Title I and Family Centers, required in the USP, to leverage resources. When

looking at the resources in totality, there is an immense force behind the success of this project: district leadership, school leadership, magnet leadership, magnet teams, teachers, resource staff, and families and community members all acting together with a unified mission—to reduce minority isolation in order to improve student achievement.

(3) The management plan ensures equal access and treatment for traditionally underrepresented groups.

This section focuses on equal access for eligible project participants who have been traditionally under represented in STEM education: African American, Native American, Hispanic, and female students, special needs students in all classes, and English language learners. The magnet schools in this proposal will offer a challenging, meaningful curriculum that is accessible to students of all ethnicities, backgrounds, and ability levels. Along with rigorous STEM content, the District will implement instructional strategies that accommodate a variety of learning styles through project-based learning and systems thinking. Teachers will be trained in these pedagogies as well as in culturally responsive practices. Schedules will include collaboration time for teachers to conduct professional learning communities (PLCs); by using data to drive instruction, teachers will closely meet the needs of each student. Exceptional education teachers will participate in PLCs to ensure that instruction is aligned and support a push in the collaborative teaching model whenever possible.

During the 2015-16 school year, Tucson Unified increased the ability for all teachers to collaborate by establishing teacher planning time set aside specifically for PLCs. In addition, Tucson Unified created a District-approved Professional Learning Communities Guide and rubric that draws heavily from Dufour's (2006) work and offered professional development sessions for teachers on PLCs. All schools in the STEM pipeline began implementing regularly

scheduled PLCs using the new District-approved PLC rubric and process of regularly scheduled PLC meetings; however, teachers within all four of these magnet schools went beyond the District requirement by offering additional PLC time during teacher planning blocks or before/after school. These PLCs were tracked through logs that included agendas, sign-ins, time, accomplishments, and goal setting. These opportunities to collaboratively write formative assessments, analyze student data, and create instructional plans that differentiate instruction according to need will continue during the 2016-17 school year.

Teachers also will use assistive technology, as needed, to enable all students to access content and will highlight student accomplishments through science and math clubs, competitions, and showcases. All students will have multiple opportunities for interaction with peers from different backgrounds to understand the strengths each brings from cultural and personal experiences. All students will gain more confidence and experience in relating to other students. In turn, they will have broadened perspectives and higher expectations for themselves and their peers. Implementing these strategies will systematically reduce achievement disparities.

(4) Project Quality and Management

During the 2010 grant cycle, MSAP funded three Tucson Unified schools. This grant called for all three sites to implement new, school-wide magnet themes. The first year of this grant was spent securing staff buy-in and embracing the change. Tucson Unified is committed to learning from past experiences; during the 2016 MSAP grant cycle, campuses have been chosen with established magnet themes and high levels of commitment. With the additional support provided from the MSAP grant, staff at all four magnet programs are ready for the next stage in implementing a rigorous Kindergarten through 12th grade STEM pipeline. These programs have committed to the idea of building common STEM practices that complement and enrich the

District curriculum. These programs hold strong promise for attaining goals for high student achievement and attracting an integrated student body.

The comprehensive implementation plan will include measurable and quantifiable outcomes. The District will accomplish this by providing high quality professional development; ensuring that research-based, data-driven pedagogy is implemented; involving parents as partners, and engaging the community in the process.

The MSAP District Leadership Team will develop comprehensive implementation strategies, known as Charters, for each theme and campus by using the *Project Charter Process*, developed by Lee Hayden (Hayden, 2012), that explicitly outlines the project purpose, project description, project objectives and success criteria, requirements, constraints, assumptions, risks, deliverables, summary milestones, and budget requirements. This team also will be responsible for coordinating opportunities for professional development and collaboration within the STEM pipeline. In addition, the Site MSAP Leadership Team will leverage District resources as needed to provide coaching on pedagogy, instruction, intervention, and enrichment strategies for school-level teams and teachers.

MSAP-funded magnet programs will be regularly monitored to guarantee that federal funds are being used to implement top-quality programs dedicated to both high student academic achievement and attaining and maintaining integration goals. Each campus will submit a monthly progress report to ensure fiscal and programmatic accountability. In addition, the District Magnet Department will generate monthly progress reports detailing central office expenditures and activities.

The internal research analyst will meet each quarter with all key grant personnel to track progress. As a result of these quarterly meetings, a succinct report of MSAP compliance will be

provided to all stakeholders from the District MSAP Leadership Team. The principal and magnet coordinator will then disseminate these findings to each site.

All key personnel, from teachers to grade-level teams, horizontal teams, PLCs, magnet teams within the STEM pipeline, and the Site MSAP Leadership Team will be involved in gathering and analyzing student data to determine the effectiveness of the plan in meeting program objectives of increasing student achievement and decreasing the achievement gap.

The timeline for implementation of the STEM pipeline expands beyond the grant cycle; the intention of this grant will be to fortify and grow an existing foundation that will augment the District's efforts to offer a high quality STEM pipeline for many years to come. The end goal for the grant cycle funding is for all four STEM pipeline schools to move from their current stage of implementation into full immersion (Arizona STEM Network STEM Immersion Guide). This process is further detailed in the Quality of Project Design section of this grant proposal. Activities specifically related to the grant's timeline are noted in the Gantt chart below.

(5) Application Fidelity

Each phase of the proposed activities will have a project charter that will allow the team to guide the implementation of the grant activities with absolute fidelity. Project charters and progress reports will be logged into the District SharePoint document management platform as both a tracking mechanism and communication tool. All information and outcomes will be transparent to all leadership team members through the use of SharePoint. This information will be disseminated to all stakeholders regularly. The District will provide parents and community members with monthly updates on the progress of grant objectives through newsletters, social media, and site-level magnet leadership meetings. This level of transparency will allow for collaborative problem solving for all magnet school programs within the MSAP grant.

(6) Diverse perspectives will be continually solicited and included in the management of the project.

Diversity benefits all members of an educational community. Tucson Unified School District's Unitary Status Plan states, "All District schools shall seek to have a racially and ethnically diverse staff." The USP outlines actions that have been and will be taken to extend outreach and recruitment on a nondiscriminatory basis, including establishing a nationwide recruitment strategy. The USP also outlines hiring strategies, which include ensuring that interview committees have diverse representation.

Opportunities to understand a broad range of perspectives and backgrounds, see a variety of role models, and have experiences that are different than one's own background allow for growth that no curriculum can match. Tucson Unified is committed to increasing opportunities for students to attend integrated schools. The four MSAP schools all have been working diligently on targeted recruitment and program marketing, and their accomplishments show in their results. Attractive programs have allowed these schools to move ever closer to eliminating minority group isolation and increase program diversity in each of the STEM pipelines. With a continuing commitment, the District will conduct quarterly data analyses on marketing and recruitment and will note trends so that the marketing plans can be refined for each magnet school community's specific needs.

In addition to ensuring a diverse workplace and striving toward integrated schools, staff within the District's magnet programs have collectively committed to lowering or eliminating the achievement gap between ethnic groups and genders. During the 2016-17 school year, quarterly assessments will be disaggregated to determine achievement trajectories and identify gaps between minority groups. This data will be used to adjust lesson planning and instruction and to

create and implement intervention and enrichment programs. Continuous assessment and reflections regarding theme implementation, instruction, curriculum, assessment, and intervention will be conducted and programs adjusted as needed. This will support magnet-theme program success and sustainability.

QUALITY OF PERSONNEL

The STEM magnet school pipeline programs will utilize experienced, high quality, specially selected staff. Each person considered for hire will undergo a rigorous hiring process to demonstrate expertise and commitment to innovative ideas and the use of best practices. Personnel employed by the project will have to demonstrate expertise in their field, understand and support the intent of magnet schools, and have knowledge of MSAP grant requirements. A summary of District level project personnel and time commitments are shown in Figure 12.

Figure 4. Proposed Personnel Resources – District Level

PERSONNEL	FTE			
	YEARS OF EXPERIENCE	TUSD FUNDED	MSAP FUNDED	TOTAL
Superintendent	**7**	**1.0**	**-**	**1.0**
Assistant Superintendent of Curriculum and Innovation	**25**	**1.0**	**-**	**1.0**
Senior Director Desegregation	**15**	**1.0**	**-**	**1.0**
Legal Counsel Desegregation	**10**	**1.0**	**-**	**1.0**
Project Director	**20**	**.5**	**.5**	**1.0**

Senior Program Coordinator (10.5 Month Position)	**20**	**.5**	**.5**	**1.0**
Program Coordinator (10.5 Month Position)	**-**	**-**	**1.0**	**1.0**
Administrative Assistant	**-**	**-**	**1.0**	**1.0**
Digital Marketing Specialist to support outreach to schools	**-**	**-**	**1.0**	**1.0**
Magnet Marketing Specialist	**6**	**1.0**	**-**	**1.0**
Internal Evaluator: to provide quantitative data to the external evaluator, program director and school coordinators	**21**	**-**	**1.0**	**1.0**
External Evaluator	**-**	**-**	**Hourly**	**Hourly**
Media Library Specialists: to assist the schools in integrating new technology into the curriculum and provide training to school	**-**	**-**	**3.0**	**3.0**

staff				
Total	**-**	**6.0**	**8.0**	**14.0**

Project Director – Mr. Daniel Erickson, Director of Magnet & Advanced Learning Experiences (ALE)

Mr. Daniel Erickson has more than 20 years of experience in education working with diverse populations. He has 14 years of experience in school administration and was recently hired as the new Magnet and Advanced Learning Experiences director for Tucson Unified. Mr. Erickson has identified five core values that focus his leadership decisions: collaboration with stakeholders; shared decision-making processes; ownership of decisions; supportive leadership; and accountability.

As the project director, Mr. Erickson is responsible for Magnet Assistance Grant implementation. This position will continue to assume responsibility for all components of program implementation, including development and monitoring of transitional management plans, enrollment, program measures, reporting at all levels (school, district, local, and federal), marketing and recruitment, and fiscal management. The project director will participate in the District MSAP Leadership Team, as described in the Quality of Project Management section. Also, because marketing and recruitment is unique to each school, Mr. Erickson will work to leverage school marketing plans and funding to achieve maximum marketing impact.

District Level Senior Project Coordinator - Dr. Adelle McNiece

Dr. Adelle McNiece earned her Ph.D. in educational leadership. She has spent more than 20 years as a public educator and governmental and educational consultant. In the field of education, Dr. McNiece has extensive experience coordinating and evaluating grant funded

programs. She is knowledgeable regarding building successful leadership and teaching teams and experienced in data and survey collection and reporting, research and analysis associated with various policies and issues, and document and content analysis. Dr. McNiece has developed and published teacher manuals, lesson plans, curriculum guides, student guides, and non-fiction science-based texts. She has published a book on integrating service learning within the language arts curriculum and another on the development of student leadership in service learning classrooms. She also has had experience in participating on a team charged with the development of state level content standards. Dr. McNiece has served as a member of the clinical faculty at George Mason University, teaching mentorship skills to other educators. In addition, she has worked as a government consultant in the areas of benchmarking, business process reengineering, and the development and implementation of surveys and evaluations. She also has provided government agencies with reviews of internal controls and security and redrafted high security manuals.

Program Coordinator - To Be Hired

The program coordinator will work directly with MSAP recipients to implement the projects as outlined in the grant. This position will assist sites with achieving site-level outcomes as detailed in each program's logic model. The project coordinator will work to support schools in development and curriculum implementation, assessments, procuring equipment and supplies, professional development, parent involvement activities, recruitment, and community outreach. The project coordinator is evaluated by the project director and is supervised on a day-to-day basis by the senior program coordinator.

Administrative Assistant - To Be Hired

An administrative assistant is vital to implementing the projects, providing office support, coordinating activities for special events, and ensuring that community members are involved. The administrative assistant will play a key role in ordering supplies, equipment, and resources for each of the magnet schools and will maintain an inventory of resources by school. The person in the position will need to be highly organized, resourceful, and able to work with various district departments as well as with community partners.

Digital Marketing Specialist, To Be Hired

Duties of the digital marketing specialist will include working with site magnet coordinators to identify marketing needs and communicating these needs the magnet marketing specialist. In addition, this position will guide magnet coordinators regarding how to most effectively use social media, take videos and photos, and offer support and training for teachers on how to update web sites. This person will also assist district staff at community events and informational meetings.

Magnet Marketing Specialist - Sally Jacunsky

Ms. Sally Jacunsky worked with the Magnet Office during the 2010 grant cycle to create one of the most successful recruitment and marketing campaigns in the history of the District for the 2010 MSAP grant. Through television, radio, internet, print, and community events, she has been instrumental in increases in magnet student enrollment across the District. Ms. Jacunsky has experience in web design and digital imaging. She will work with the digital marketing specialist, magnet coordinators, and magnet teams to design marketing materials and media campaigns and host and attend community events. She will create brochures, displays for outdoor advertising, and displays for events.

District-Level Internal Evaluator – Dr. Stephen Gaarder

Dr. Stephen Gaarder joined the District as a research project manager in the summer of 2015. He has doctoral-level training in research methods and data analysis and holds a Ph.D. in public policy analysis. Prior to joining Tucson Unified's Assessment and Evaluation Department, Dr. Gaarder worked in a variety of research and evaluation positions and environments, working with historically underserved populations in education, health care, and social services. In his current position, Dr. Gaarder conducts a variety of evidence-based research and evaluation projects involving administrators, students, support staff, and teachers. He is actively involved in an array of grant-related projects and works collaboratively with entities, both inside and outside the district. As a multi-methods research specialist, Dr. Gaarder designs and implements program evaluations, supports staff in analyzing data, and is able to plainly explain data and data analysis. He has 30 years of research-based work and is an asset to any program. As a research project manager, Dr. Gaarder designs and initiates research and evaluation projects. He also conducts evaluation of instructional programs and research of educational issues important to Tucson Unified.

External Evaluator – To Be Hired

The ideal candidate for the external evaluator position will be a seasoned evaluator with experience working in K-12 public school environments and will have knowledge of multi-method design and STEM education. The external evaluator will be responsible for collecting and analyzing qualitative data, including key informant interviews, focus groups, surveys, and observational strategies and techniques. The internal and external evaluators will meet with the District MSAP Leadership Team each semester to review the progress of the evaluation plan.

District MSAP Leadership Team Members

Superintendent – Dr. H.T. Sanchez

H.T. Sanchez, Ed.D., is the superintendent of Tucson Unified School District. Prior to this appointment, he held several positions in Ector County Independent School District in Texas, including interim superintendent, deputy superintendent/chief of staff, and assistant superintendent for accountability and special populations. He also has proven his leadership skills as the executive director for Instructional Services as well as director for Bilingual/ESL Services. Dr. Sanchez has seven years' experience as a principal in middle and high schools and was an adjunct professor at Texas A&M University-Commerce for more than 17 years.

Senior Director of Desegregation – Martha Taylor

Ms. Martha Taylor is the senior director of Desegregation and is responsible for assuring compliance with the court-ordered Unitary Status Plan (USP), including monitoring progress of 10 different district departments and more than40 distinct activities. Ms. Taylor works with the Finance Department to develop and monitor spending of a $63.7 million budget. She also works with district employees to develop and implement an action plan to ensure compliance and organizes the development and editing processes for the court-ordered USP annual report.

Legal Counsel (Desegregation) – Sam Brown

Mr. Sam Brown is the internal counsel for District staff, the Governing Board and superintendent, senior desegregation director, outside legal counsel, and the special master to facilitate implementation of TUSD's desegregation court order in order to obtain unitary status for the District. Prior to this position, Mr. Brown was the District's desegregation director, serving as the lead administrator for TUSD's Desegregation Department. Mr. Brown has been part of TUSD's legal counsel for more than six years.

Assistant Superintendent of Curriculum and Innovation – Richard Foster

Mr. Foster has a long and impressive history with the District, first as a principal and then in other leadership roles at the central office before taking his current position as the interim assistant superintendent for Curriculum and Innovation. Mr. Foster supports the USP activities through the development and implementation of culturally relevant courses, pedagogy, and instruction. Mr. Foster supervised the Project Director oversees the Tucson Unified's Magnet Department.

Media Library Specialists – To Be Hired

The media library specialists will provide a tremendous support to the schools and magnet coordinators by providing the necessary professional development and technical support materials to ensure proper integration of technology into the curriculum. In addition, the specialists will support students and teachers with incorporating new media techniques into project-based learning presentations and other products that enhance student learning.

Figure 5. Proposed Personnel Resources – Site Level

PERSONNEL	**FTE**			
	YEARS OF EXPERIENCE	**TUSD FUNDED**	**MSAP FUNDED**	**TOTAL**
BORTON				
Principal – Denice Contreras	**29**	**1.0**	**-**	**1.0**
Magnet Coordinator – Caryl Crowell	**35**	**1.0**	**-**	**1.0**
PBL Support Teacher – Kathy Lohse	**32**	**1.0**	**-**	**1.0**

Outdoor Learning Teacher – Mike Amundsen	**30**	**1.0**	**-**	**1.0**
Outdoor Learning Coordinator – Molly Reed	**14**	**1.0**	**-**	**1.0**
MANSFELD				
Principal – Richard Sanchez	**18**	**1.0**	**-**	**1.0**
Magnet Coordinator – Kirstin Bittel	**16**	**1.0**	**-**	**1.0**
Teacher - STEM CORE Class	**-**	**-**	**1.0**	**1.0**
Teacher - STEM Elective	**-**	**-**	**1.0**	**1.0**
Magnet Office Clerk	**-**	**-**	**1.0**	**1.0**
PALO VERDE				
Principal – Eric Brock	**17**	**1.0**	**-**	**1.0**
Magnet Coordinator – Mario Gastellum	**16**	**1.0**	**-**	**1.0**
Engineering/Robotics – Anne Marie Condes	**16**	**1.0**	**-**	**1.0**
TUCSON HIGH				
Principal – Karyle Green	**31**	**1.0**	**-**	**1.0**
Magnet Coordinator –	**25**	**1.0**	**-**	**1.0**

Sharon Ingram				
Science Department Head – Sheila Marquez	**11**	**1.0**	**-**	**1.0**
Greenhouse and Sustainability Lab & Garden Teacher	**-**	**-**	**1.0**	**1.0**

STEM Pipeline Principals

Borton Magnet Elementary – Denice Contreras

Ms. Denice Contreras joined the Borton staff in 2014 and has become a tremendous supporter of the school's project based learning and systems thinking magnet theme. She manages a $450,000 budget annually generated from Magnet, Title 1, School Improvement grant, and **21st** Century Community Learning Centers Program (CCLC) program funds. Ms. Contreras, who has been an employee of the District since 1987, was a Title 1 program coordinator prior to joining the Borton team.

Mansfeld STEM Magnet Middle – Richard Sanchez

Mr. Richard Sanchez was recognized as the TUSD Secondary Principal of the Year for 2015. This is an honor, as awardees are nominated and selected by their peers. Mr. Sanchez has been a strong, forward-thinking leader at Mansfeld since 2008, when he joined the school as an assistant principal. Under his leadership, the culture and climate of Mansfeld has flourished, with the school becoming a place where staff works collaboratively to implement rigorous STEM curricula.

Palo Verde High Magnet – Eric Brock

Mr. Eric Brock describes himself as a life-long learner of educational leadership that results in cooperative school teams that support students' diverse needs and dreams. Mr. Brock is a Palo Verde graduate and a seasoned District employee with more than six years as a leader at Palo Verde. His professional journey includes experience as the magnet coordinator and assistant principal of curriculum and instruction. Over the last few years, Mr. Brock has helped to lead Palo Verde High school in its transformation from an underperforming school to an "A" rated school.

Tucson High Magnet School – Dr. Karyle Green

Dr. Karyle Green is the principal of the District's largest high school, which has more than 3,200 students and 250 staff. She comes to Tucson Unified with experience as a superintendent in a district with 9,500 students. Dr. Green has been awarded SARSEF recognition as an Administrator Supporting Science Education.

Tucson High offers students two magnet themes: fine and performing arts and natural science. Offering a rigorous curriculum and partnering with the University of Arizona and other partners, students are prepared for college and careers in various areas in science.

Site-Level Magnet Coordinators

Each school in this proposal has an established magnet coordinator. Site-level magnet coordinators analyze, evaluate and ensure that the goals and objectives for the magnet program are accomplished according to established priorities, time, funding limitations, and MSAP requirements.

Magnet coordinators work directly with teachers, professional learning communities, horizontal teams, and vertical teams to implement curriculum with fidelity. Coordinators will work with the project coordinator to analyze student data, provide instructional coaching,

curriculum development, and professional development. Magnet coordinators will accelerate efforts to recruit and place minorities and underrepresented populations in programs that will enable them to achieve in all fields. At school sites, the principal and counselors will increase efforts to support these populations in succeeding in traditionally underrepresented courses. This is especially true for those who could be recruited to participate in the STEM pipeline. School-level coordinators are imbedded in school level budgets and are key to program implementation. Magnet coordinators report directly to school principals.

Borton Magnet Elementary – Caryl Crowell

Ms. Caryl Crowell is a strong leader in project-based learning and systems thinking and supports the school's professional learning communities through data analysis and curriculum development. She has been an employee of the District for more than 35 years and continually sharpens her STEM knowledge base through continuous learning opportunities. Ms. Crowell has many scholarly publications, and has won many awards and recognitions. In 2014, Ms. Crowell was awarded the Reclaiming the Joy of Teaching Award and was an Arizona nominee for the Presidential Award for Excellence in Science Teaching. In 2015, she was honored with the Kenneth S. Goodman "In Defense of Good Teaching" award by the University of Arizona's School of Education. She is the current president of the Whole Language Umbrella and serves on the Executive Committee of National Teachers of English. As well, she is an associate facilitator for the Waters Foundation Systems Thinking in Schools Project.

Mansfeld STEM Magnet Middle – Kirstin Bittel

Ms. Kirstin Bittel has been the magnet coordinator at Mansfeld since 2013 and has taught 7th and 8th grade science in the district for 11 years. Kirstin received the Women in Science and Engineering K-12 Educator for the Year award in 2014 and was a finalist for the Science

Teacher Innovator of the Year award. She is highly regarded by her District peers and co-facilitates STEM workshops not only at the school site but district-wide.

Palo Verde High Magnet – Mario Gastellum

Mr. Mario Gastellum completed his first year as magnet coordinator at Palo Verde in 2015-16, but he is not new to the campus; he was also the 21st century coordinator and a world and American history teacher. He is a strong student advocate, coaching varsity girls cross county and varsity boys soccer.

Tucson High Magnet School – Sharon Ingram

Ms. Sharon Ingram has been with the District since 1991, beginning her professional career as a high school social studies teacher. She has a strong curriculum and instructional background, including knowledge of and experience in teaching advanced placement coursework. She has been the magnet coordinator for five years, providing leadership and professional development opportunities for her colleagues. She is also an active member of the Tucson Education Association and holds numerous national professional affiliations.

Classroom Level - Teachers

The classroom teacher holds a primary responsibility for the delivery of continuous, contiguous, articulated, theme-based instruction as well as student achievement. Classroom-level implementation of the school magnet theme will be delivered within an academically rigorous curriculum. The educational environment within each classroom will be one in which high achievement is a constant expectation. Teachers and school staff will be provided with the professional development and vertical and horizontal planning time needed to allow for the comprehensive development of theme-based curriculum.

Teachers who will provide instruction in participating magnet schools are qualified to implement the special curriculum of the magnet schools. All of the teachers are highly qualified for the subject that they are teaching. However, starting in year one of the grant cycle, teachers will receive in-depth professional development in systems thinking, project-based learning, and STEM practices.

Any newly hired teachers will be chosen for their knowledge and commitment to the magnet theme and will agree to participate in further professional development. The hiring process will include questions that pertain to the magnet theme, instructional methodology, integrated curriculum, and assessment. Starting in the second year of the MSAP grant, collegial mentors will be assigned to new teachers.

(7) Tucson Unified personnel are selected for employment without regard to race, religion, color, national origin, sex, age or disability.

According to the District's court mandated USP, recruitment for all employment vacancies will be conducted on a nondiscriminatory basis. Tucson Unified will seek to enhance the racial and ethnic diversity of its administrators and certificated staff through its recruitment, hiring, assignment, promotion, pay, demotion, and dismissal practices and procedures. Certificated staff and administrators are maintained at the District level to encourage applicants to apply for individual positions and for the employment pool. All applicants in the employment pool shall be considered for all available vacancies for which they qualify.

Tucson Unified School District strictly adheres to Governing Board policy, which was adopted in January 18, 2005, and revised August 23, 2011:

Discrimination against an otherwise qualified individual with a disability or any individual by reason of race, color, religion, sex, sexual orientation, age, or

national origin is prohibited. Efforts will be made in recruitment and employment to ensure equal opportunity in employment for all qualified persons.

Policy regarding nondiscrimination will be strictly adhered to regarding all MSAP grant employees. The Governing Board policy of nondiscrimination can be found in the attachments.

EVALUATION PLAN

The Magnet School Assistance Program (MSAP) project's implementation and outcomes will be evaluated using a methodologically rigorous and comprehensive evaluation design employing both quantitative and qualitative measurements. The evaluation plan details Tucson Unified School District's MSAP goals, objectives, and performance indicators. The evaluation team will collaborate with the four site-based teams to develop site-based plans that reflect the design of each magnet program while remaining true to the district plan.

(1) Evaluation methods measure effectiveness of project implementation strategies

Formative and Summative Evaluation

Both formative and summative evaluation matters will be addressed. Formative assessment activities will ensure the fidelity of program implementation. Examples of measurement indicators include the number of hours of professional development that magnet teachers receive (dosage) and participant feedback to program services (quality). This data will be reported and used by project staff to make programmatic improvements to project activities and services as necessary. Summative evaluation activities will determine the extent to which project goals and objectives are met. Summative indicators, such as the increase in non-minority enrollment or student academic test scores, will be collected and analyzed.

A. Quantitative and Qualitative Measures

The MSAP evaluation will use a multi-method design, collecting and analyzing quantitative and qualitative evaluation data. While the quantitative data will be used largely for summative purposes, the majority of the qualitative data collected will be used primarily for formative evaluation purposes. Quantitative data will include District student-level data such as demographic indicators and assessment data along with any other District data needed for evaluation purposes. Qualitative data will include interview, focus group, survey, and observational data based on interactions with school administrators, project staff, teachers and parents, and any other relevant stakeholders regarding program activities and services (adherence, quality, and quantity). Site visits will be conducted at least annually at each site to assess development and implementation of magnet themes.

B. The Evaluation Team - Internal and External Evaluators

The evaluation will be piloted by an internal and external evaluator, each collecting and analyzing evaluation data, monitoring the progress of the evaluation plan, and reporting to both internal and external stakeholders. The internal evaluator, Dr. Stephen Gaarder, is a research project manager with TUSD's Department of Assessment and Evaluation and has experience with the existing data systems of the District. As noted in the Quality of Personnel section, he has more than 20 years of experience in program evaluation in education, healthcare, and social services. Dr. Gaarder is currently engaged in a district-wide evaluation of the District's equity programs along with a variety of other data and evaluation-related activities. Dr. Gaarder will be responsible for the ongoing internal data collection, monitoring, and reporting related to the District's data collection systems. He will also work closely with the project coordinators at each site to ensure the fidelity of data and information provided.

The District will work with its vendors to identify qualified candidates for the .5 FTE external evaluator position. Qualifications for the ideal candidate are detailed in the Quality of Personnel section. The internal and external evaluators will meet with the MSAP leadership team each semester to review the progress of the evaluation plan.

(2) Evaluation methods use objective performance measures clearly related to intended project outcomes and produce qualitative and quantitative data

The evaluation plan is designed to determine how successful the project is in meeting its intended outcomes, including its goals for desegregating its students and increasing student achievement. Table 7, below, summarizes the performance measures and indicators that will assess the extent to which the six primary objectives of the project are met. Both formative and summative performance measures are included. Data indicators, their sources, and the data collection procedures are detailed in Table 7.

(3) Promoting desegregation and increasing interaction among students of different social economic, ethnic and racial background

The objective associated with this goal is decreased magnet minority isolation. Achieving this objective will involve measurable strategies that include providing opportunities for students from diverse backgrounds to interact and engage with each other and creating schools that are racially integrated as defined by the Unitary Status Plan (USP). Marketing and recruitment activities are critical components of this strategy, and the evaluation will track process indicators, including the number and type of recruitment activities, and use qualitative methods to assess the effectiveness of marketing activities. These qualitative methods include conducting interviews and/or focus groups with prospective parents and surveying prospective students regarding

school choice and magnet programs. Information collected from these efforts will be used to refine and focus recruitment messages and strategies to attract targeted students at each site.

Reducing minority isolation also will require identifying measurable performance indicators that include the extent to which instructional strategies promote student interaction and engagement in the classroom as well as opportunities outside of classroom settings. Other evaluative activities will include site visits, student interviews, and annual surveys of site staff. Information collected from these efforts will be used to assess the extent to which these opportunities exist both inside and outside the classroom and to provide recommendations for program improvement.

(4) Improving Student Academic Achievement

There are two primary objectives associated with this goal. The second objective of the project is to provide rigorous, challenging, and engaging STEM curriculum with high quality instruction in the chosen magnet theme, while the third objective is to increase the proficiency of students in core content subjects. This includes not only increasing student mastery as measured by the state standardized assessment, but also providing student support services that allow students to address learning gaps. These intervention support services will be monitored and assessed with respect to their effectiveness in improving students' academic skills. The internal evaluator will meet with the site-level Magnet Team to review student academic data and develop intervention supports.

(5) Reducing Achievement Gaps between Minority and Non-Minority Students and Genders

The fourth objective of the project is to decrease achievement gaps between minority and non-minority students and genders. The logic model identified a 2 percent reduction each year

(totaling a 6 percent reduction over three years) in the achievement gap as measured by performance on the state assessments. Other quantitative measures include the number of students who meet or exceed proficiency on state AzMerit math and reading tests by race and ethnicity; the number of students who meet or exceed mastery on state AIMS science test by race and ethnicity; the number of students who meet or exceed proficiency on AzMerit high school reading, writing, and math tests by race and ethnicity; and the number of students participating in and the number of participation hours in academic intervention services.

(6) Promoting Parent Decision Making and Involvement

The fifth objective of the project is to develop opportunities for parents to engage and participate in school events, activities, and organizations. The traditional parent-teacher conference will be reorganized using the Academic Parent Teacher Team (APTT) model, with the expectation that parents will participate and actively engage with their children's academic and enrichment activities. In addition, each site will develop a formal Magnet Advisory Committee with parent members. These site-based committees will meet at least three times per year to monitor implementation of the magnet theme, review data, and provide feedback and recommendations for improvement. While a number of process and outcome measures will be evaluated, an annual survey of parents will be conducted to assess the perceived knowledge and understanding of parents with respect to the magnet theme, their participation and involvement with the school, and their satisfaction with the creation and implementation of the magnet theme. The information collected will be used for both summative and formative purposes.

The sixth and final primary outcome of the project is to increase technological capacity by 10 percent by the end of year three. This outcome is related to program sustainability, with the expectation that the increasingly robust magnet programs will exist beyond the end of the

MSAP grant period with the help of increased technological capacity. Technological capacity is measured by the annual TUSD Technological Capacity Index performed by the District's Technological Services Department.

While the project evaluation plan provides a comprehensive evaluation for the magnet project as a whole, the design and implementation of a diverse set of magnet themes requires that sites develop individual site plans with specific performance targets based on their baseline data. These plans can be seen in each site's logic model, found above. Based upon the district logic model, the site models are consistent with the district model, while varying minimally to capture distinct site characteristics. The evaluators will work with site project staff on developing their management and implementation plans that are congruent with their magnet theme and include evaluative activities, benchmarks, and timelines.

(7) Includes methods that are objective and that will produce data that are quantifiable

As detailed above, the methods used to assess the performance measures are objective and will produce data that are quantifiable. The data sources and collection processes are consistent across sites and can be reproduced. Any additional instruments, such as survey instruments, interview protocols, and observation rubrics will be developed to ensure that the data collected is also consistent across sites and quantifiable where possible.

The district will use an integrated data collection system for this project. The Synergy Student Information System (SIS) is supplanting the district's current SIS, which will be retired and replaced by Synergy on July 1, 2016. Synergy will be the official record and primary database for managing all student-level demographic, academic, and related information. Individual student data from the system is accessible to school and district staff based on their

level of access (for example, teachers have access to their classroom data and principals have access to school data).

Following on the heels of Synergy going live, a second data tracking and intervention manager, Clarity, will go live. These two new systems are designed to interact with each other, with Clarity tracking academic and behavioral risk indicators at the student level and alerting district staff when a student's risk status increases. Clarity also will allow the district to track academic and behavioral interventions, including data on student and parent activities using dosage, simply defined as the number of hours and minutes that students participate in academic and behavioral interventions and/or enrichment activities. This data collection is currently accomplished using a legacy system developed by the district known as Grant Tracker (GT). The Department of Assessment and Evaluation has access to all data for the purpose of analysis, research, and dissemination. These new systems will dramatically improve the district's collection, management, and access to data, and manifestly improve interoperability across the district. In addition to Synergy and Clarity, the district uses a Professional Learning Portal (PLP), managed by the District's Human Resources Department, to track the type and amount of professional development teachers have had. Teachers can sign up for workshops and classes and their hours will be recorded. The data in these systems will be monitored for fidelity by the internal evaluator.

Table 7. Evaluation Plan Goals and Objectives, Performance Measures, Indicators, Data Sources, and Data Collection

Project Goals and Objectives	Performance Measure	Indicator	Data Source	Process for Data Collection
Objective 1: Decreased minority student isolation	Each magnet school will increase the number of magnet applications from non-minority racial/ethnic students by 5% each year from site baseline	The number of magnet applications by race/ethnicity	District magnet application data	Collected by A&E on a daily basis from the district's Student Information System (SIS) Synergy
	Each magnet school will increase the number of enrolled students from non-minority racial/ethnic groups by 2% each year from site baseline	The number of enrolled students by race/ethnicity	District enrollment data	Collected by A&E on a daily basis from the district's SIS (Synergy)

	Each magnet school will develop and implement a recruitment and marketing plan to attract students. Plan must include at least one site and one external recruitment activity each semester.	Submission of a completion of a recruitment and marketing plan within first four months of grant	District enrollment data	Collected by A&E on a daily basis from the district's SIS (Synergy)
		The number of community recruitment events attended by School administrators and site project staff	Recruitment contact database	Collected by project site coordinators at the end of each semester
		The total number of school recruitment activities, including open houses, mailings, contacts, and site tours		Collected by project site coordinators at the end of each semester

Objective 2: Rigorous STEM practices that complement and build upon District curriculum as identified by the Danielson Framework 75% of teachers rated as effective or highly effective as measured Principal assessments	Each teacher will receive a minimum of 30 hours of pedagogical training and 10 hours of cultural competency to improve classroom instruction and improve cultural proficiency	The number of hours teachers participate in cultural competency training The number of hours teachers participate in classroom pedagogical training	Professional Development Attendance sheets	Data collected in a professional development database on an ongoing basis by project site coordinators
	95% of magnet teachers at each site will be deemed effective in implementing targeted instructional strategies by the end of the second year	The number of teachers at each site who score as effective or highly effective on classroom observational rubrics	Classroom observational rubrics, including district required rubrics, and the Reformed Teaching Observational Protocol (RTOP)	Collected by school administrators and other observers each semester

	The number of teachers whose lesson plans are deemed effective or highly effective	Site magnet teachers responsible for student Instruction	Collected and analyzed for each teacher by project staff at the end of each semester
75% of the student population will be participating in school enrichment opportunities by the end of the third year	Number of students participating in academic enrichment activities	Synergy SIS and Clarity	Collected and data entered on an ongoing basis by project site coordinators
Students participating in academic enrichment activities will receive a minimum of 20 hours a year	Total hours of participation by students in academic enrichment activities		

Each magnet core teacher will receive at least 45 hours of professional development in core content related to site magnet theme each year	The number of hours each teacher participates in magnet-related training	Professional Development Attendance sheets	Data collected in a professional development database on an ongoing basis by project site coordinators
100% of the magnet core content teachers will have reached the required level of proficiency in their core standards by the end of the third year	The number of hours each teacher participates in core subject content training	Professional Development Attendance sheets	Data collected in a professional development database on an ongoing basis by project site coordinators
	Completion and/or certification in the required core content training	Certifications/ endorsements of competency	Collected and submitted by project site coordinators

		The number of teachers whose lesson plans are deemed proficient	Site magnet core teachers responsible for student instruction	Collected and analyzed for each teacher by project staff at the end of each semester
		The number of teachers at each site who score as proficient on classroom observational rubrics	Classroom observational rubrics related to core content	Collected by school administrators, project director, and other observers each semester
	100% of the magnet teachers will participate in at least four hours of Professional Learning Community study groups per year	The number of hours teachers participate in Professional Learning Community study groups	Professional Development attendance sheets	Data collected in a professional development database on an ongoing basis by project site coordinators
Objectives 3 & 4: Improved student	The percentage of 3rd through 8th graders who are	The number of students who meet or exceed	AzMerit score – state-standardized	Provided to A&E by Arizona Department of

achievement & decreased achievement gaps	proficient in math will increase by 10% each year	proficiency on state AzMerit math test	test given each Spring in reading and math	Education (ADE)
	The percentage of 3rd through 8thgraders who are proficient in reading will increase by 10% each year	The number of students who meet or exceed proficiency on state AzMerit reading test		
	75% of the 4th and 8th graders will be proficient in science at the STEM Magnet schools	The number of students who meet or exceed Mastery on state AIMS science test		
	100% of the Palo Verde and Tucson High students will meet or exceed proficiency levels on state assessment (AzMerit) in reading, writing, and math at the end	The number of students who meet or exceed proficiency on AzMerit high school reading, writing, and math tests		

	of 10th grade			
	100% of Palo Verde and Tucson High s students will earn the requisite number of core class credits needed for graduation at the end of each year	The number of core class credits to meet graduation requirements	Student grade attainment data	Collected by A&E on a daily basis from the district's Student Information System (Synergy)
	100% of magnet students who perform below proficiency level will participate in at least one academic intervention support program each semester	The number of students participating in at least one academic support intervention	Student schedule data and/or A&E Clarity intervention manager	Collected by A&E on a daily basis from the district's Student Information System and/or collected and entered by project site coordinators on regular

	Each magnet student participating in an academic intervention support program will receive a minimum of three hours per week	The number of hours students participate in academic support interventions		basis
Objective 5: developing opportunities for parents to engage and participate in school events, activities, and organizations	Every magnet parent will attend at least one Magnet Parent-Teacher team (MPTT) meeting each semester	The number of parents participating in MPTT meetings	A&E and Clarity	Collected and entered by project site coordinators
		The number of parents reporting participation in MPTT meetings	Annual parent survey	Collected by internal and external evaluators annually
	The number of magnet parent volunteers will increase by 10% each school year	The number of parents volunteering at the school site	Logs maintained by TUSD Student Services	Collected and submitted by project site coordinators

	Two magnet parent-led workshops will be held per year at each school site	The number of parent-led workshops held each semester	Presentation agendas	
	Each site MSAP leadership team will create a magnet advisory committee to review the design and implementation of the Magnet program bi-monthly during the school year	The number of parent participants active on the magnet advisory committee	Magnet advisory committee attendance sheets	
	85% of magnet parents will attend at least one parent engagement event at the school each year	The number of parents participating in a site event or activity	Annual parent survey	Collected by internal and/or external evaluators at the end of each school year

Objective 6: Increased technological capacity of magnet programs	Technological capacity of magnet programs will increase by 10% by year 3	The number and type of tech equipment added to magnet programs from baseline	TUSD's annual Technological Capacity Index	Collected by TUSD's Technological Services department