Maricopa Institute of Technology STEM High School (MIT) will serve students in grades 9-12 in the urban, industrialized, and commercial area of Phoenix, Arizona, inside the Riverside Elementary School District No.2.

Mission

Maricopa Institute of Technology (MIT) is a college preparatory high school providing an advanced Science, Technology, Engineering, and Mathematics (STEM) Education while challenging students to pursue personal excellence in character, in order to serve and lead others. MIT will provide a comprehensive and rigorous STEM curriculum through interdisciplinary work, independent learning, projects, internships, and college credits earned by graduation through Advanced Placement (AP) or Dual Enrollment classes.

Vision

MIT will provide a Science, Technology, Engineering, and Math Program to students within a state-of-the-art research facility with the goal of preparing our students for collegiate success and successful STEM careers.

MIT will provide access to STEM educational opportunities and improve student achievement through the educational philosophy and program of instruction described below.

A. Philosophical Approach

MIT 's philosophical approach to improving student achievement is based on the belief that in order to adequately prepare students for college enrollment and STEM career success, we must expose students to college and career expectations and challenge students beyond any previous levels of achievement.

1. We believe maximizing student achievement and success through a rigorous foundation in communication, innovation, critical thinking, problem solving, and collaboration will raise student achievement levels for success in the areas of STEM development, and college and career preparation.

2. We believe that implementing a highly qualified, effective in person teaching faculty with a research-based online learning curricula, specialized lab facilities, and project based common assessments will increase student interest and engagement in STEM curricula.

3. We believe that with proper motivation and support, all students will achieve academic success in rigorous and advanced STEM curricula.

4. We believe that personal excellence in character is critical to productive leadership.

1. We believe maximizing student achievement and success through a rigorous foundation in communication, innovation, critical thinking, problem solving, and collaboration skills are needed for success in the areas of STEM development and college and career preparation.

Maricopa Institute of Technology (MIT) believes that communication skills, innovation, critical thinking, problem solving, and collaboration are key skills that will characterize students who are prepared for the 21st Century (Framework for 21st Century Learning, 2009). The research states that "within the context of core knowledge instruction, students must also learn the essential skills for success in today's world, such as critical thinking, problem solving, communication and collaboration." MIT believes that by incorporating these skills into our rigorous college-preparatory curricula and culture, MIT students will be prepared to apply, enroll and graduate from college.

The percentage of high school graduates enrolling in college is increasing for all racial and income groups (Nash & Education Trust, 2009); however, these gains in college access rates are not being matched by gains in college success rates. The United States has one of the highest college-going rates in the world, yet its college-completion rates (both two and four year) rank near the bottom half of the industrialized nations (College Board, 2008a). Only 35% of America's college students graduate with a bachelor's degree in four years and just over half (52%) graduate within six years (College Board, 2009). For students who attend college part-time, the completion rate is even lower: less than 25% graduate within eight years (Complete College America, 2011).

MIT administration believes that college graduation is a leading indicator of future career success. MIT believes that by providing students with a rigorous curriculum, highly-effective instruction, support, and a school culture that values higher education, MIT students will apply, enroll, and have the necessary skills to complete their college education. MIT will prepare all students for college graduation and career readiness through the following ways:

- Successful completion of Pre-AP courses in preparation for a rigorous college-preparatory curriculum, college level Advanced Placement courses or Dual Enrollment courses, and a focus on science, technology, engineering, and math (STEM).
- Providing a high tech science lab facility for hands on, inquiry based projects and research.
- Highly qualified teachers providing direct and effective instruction.
- Implementing online learning with collaborative tools and resources to differentiate and personalize concepts and skills in the course content.
- Using data to support students through personal counseling to meet goals for college and career success.
- Creating a school culture that provides continuous conversation and experiences related to college as well as visits to colleges and universities.

Maricopa Institute of Technology's mission, vision, and STEM college preparatory academics will provide MIT students with the skills necessary to apply, enroll, and graduate from college, leading to career success.

2. We believe that implementing research-based blended learning curricula with specialized lab facilities and highly qualified faculty, and project based common assessments will increase student interest and engagement in STEM curricula.

Maricopa Institute of Technology (MIT) will be operating in a two story 60,000 square foot facility being developed by Riverside School District No. 2. The facility will house the latest technology for on-site and off-site digital education as well as Science Labs for developing robotics and engineering courses. The building incorporates a high-tech look, with project-based work areas for student, university and business collaboration.

MIT in partnership with Riverside Elementary District #2 wants to give students an opportunity to become immersed from elementary, middle school, and transition to a secondary STEM college and career readiness program that will help them be successful in a Project Based STEM curricula. MIT will prepare students with real life experiences in collaboration with STEM driven companies, corporations, and industries. This experience will empower, support, and establish STEM driven experiences students may utilize to complete college and university courses and assist in a seamless transition. Students who have both expressed and a measured interest in STEM are more likely to meet three or more ACT College Readiness Benchmarks, suggesting they are better prepared for success in college coursework (ACT, 2014).

Technology plays an integral role in supporting the curriculum and instruction at MIT. With the implementation of 1:1 laptops, students have instant access to instructional material and documentation to supplement their classroom research. Students also use their laptops to access the MIT PEAK Platform to review their Personal Plan for Progress and FuelEd on-line learning program for individualized learning.

Teachers will evaluate, select and use effective online instructional materials, strategies and resources to engage students. Students will use this online process to help their achievement and development of academic skills. Maricopa Institute for Technology (MIT) will incorporate the Flex Model and A La Carte blended learning models into the development of STEM proficient students.

The Flex Model is a program in which the online learning allows the teacher to intensify the level of instruction for students. The teacher will customize courses, add digital content created by the teacher, and differentiate instruction to improve student outcomes. Our teachers and support staff will provide face-to-face support on a flexible and adaptive as-needed basis through whole group, small group instruction, group projects, and individual tutoring. All progress and assessment results are scored and kept with online learning activities and tracked through the Personalized Learning Platform (PEAK). Students will also access homework assignments and view their academic progress by logging on to the internet. The school-wide adoption of digital content will happen daily.

The A La Carte Model is a program in which students can take additional online courses during a scheduled time period or on their own time. Social Studies and world language online learning classes are scheduled during the school day. The online courses will also incorporate interdisciplinary work and grade level independent projects to maintain a rigorous college ready environment. Students will take the classes before school, during lunch, or after school. All online classes will be monitored by a teacher. The A La Carte model is designed to encourage our students to expand their learning and to solidify our focus on STEM education.

3. We believe that with proper motivation and support, all students will achieve academic success in rigorous and advanced STEM curricula.

Estrella Educational Foundation has two main strategic units. These are: Education Charter Schools for Science, Technology, Engineering and Mathematics (STEM) and Educational Services for Underserved/Economically Disadvantaged Student Populations. Through partnerships with school districts and community resources, Maricopa Institute of Technology will develop a collaborative process to enhance the delivery of educational services for students in the Riverside school district and surrounding communities. This collaborative process will be utilized as the process for intervention and

continuous improvement. The Maricopa Institute of Technology (MIT) Headmaster, an employee of EEF, will work in tandem with District office and parent community groups to establish and sustain the vision and goals of the EEF's charter school.

MIT will ensure that each student and parent participates in the creation of a personalized education plan tailored to meet student goals and needs. Students will be given a diagnostic assessment (Act Aspire A.5) to establish baseline data for students, parents, and administration. Students will then be scheduled for enrichment opportunities, pre-advanced, advanced or dual enrollment placement. Student test data and previous academic history will also be taken into consideration during the initial interview process. The Personalized education plan becomes an important process that benefits the student, family and community.

4. We believe that personal excellence in character is critical to productive leadership.

Maricopa Institute of Technology will use the Character Counts Program to instill six ethical values: Trustworthiness, Respect, Responsibility, Fairness, Caring, and Citizenship. The Character Counts Program is supported by the Josephson Institute and their youth ethics initiative is a project of the Institute. The MIT community will advocate, model, and measure the set of core values essential in a democratic society.

B. Principles Fundamental to the program of Instruction

Maricopa Institute of Technology's focus on the STEM curriculum will be a rigorous college preparatory program and relevant to students preparing for a STEM career. MIT community partnerships will address the academic and non-academic needs of students and increase student achievement through the following fundamental principles:

- A rigorous STEM college-preparatory curriculum and facility, college readiness, and AP and College level courses.
- Highly qualified teachers using data, effective instructional strategies, and blended learning structures to meet the needs of all students
- Support for all students through a Personalized Education plan and College and Career Counseling.
- A school culture that values and models the values of the Character Counts Program and the goal of higher education.

A rigorous STEM college-preparatory curriculum and facility

Arizona State University—the largest university in the state, and one of the largest in the country acknowledges the importance of mathematics and sciences to increase Arizona's global economic competitiveness by sponsoring grant programs in secondary schools to "increase the number of students who enroll in and complete college majors in the STEM sectors." (ASU News, 2010). MIT'S curriculum and instruction is designed to prepare students for careers in STEM fields. The STEM curriculums will be strengthened and rigorous through the implementation of reading and writing to learn, inquiry, critical thinking, collaboration, and organization. MIT will integrate its STEM curriculum through activities, projects, and problem based learning to provide hands on classroom experiences. A curricular focus on Science, Technology, Engineering, and Math encourages and provides students with an opportunity to

learn and enrich their interest in STEM fields. Also, students will be exposed to professionals from local industries to provide the real world aspect and to provide internships and work place experiences. Arizona Minority Student Progress Report (2013) illustrates the need to systematically extend opportunities available to Arizona students.

The MIT and Riverside administrative team will collaborate and establish a seamless K-12 STEM program. MIT will investigate a partnership with Project Lead the Way (PLTW) to deliver science, technology, engineering, and math (STEM) programs. The PLTW approach is project-based and gives students a chance to apply what they know, identify a problem, find unique solutions, and lead their own learning, rather than be passive recipients of information. The PLTW courses are aligned with Common Core Standards in math and English Language Arts and Next Generation Science Standards. The PLTW programs are flexible and can be customized to meet our community needs. PLTW was cited as a "model for 21st century career and technical education."

In the first year, MIT students will take Foundations of Technology and Introduction to Engineering to explore and link stem principles to relevant problem-solving activities. Our Engineering and Technology Labs will be utilized to integrate project-based learning with Arizona's Common Core Standards in Science and Math. The program will promote hands-on exploration, inquiry design, and problem solving. These classes will lead to higher level engineering and technology classes. The Engineering and Technology courses integrate the science and math into the hands-on, inquiry design, and problem solving projects.

Advanced Placement (AP) and college level classes
AP and Dual enrollment college courses in several disciplines will ensure that college-level academic rigor is the mission of MIT. Students will be able to receive college credit and complete their first or second year of college before leaving MIT. Studies show that students who take AP and college classes in high school, were found to be more likely to graduate from college within four years and have a higher grade point average in college than students who were not exposed to college classes (College Board 2007).

Highly qualified teachers using effective instructional strategies

MIT's curriculum and instruction will be designed to ensure that all students are prepared for entrance to college and universities. MIT staff will not only be "highly qualified" as defined by Arizona Department of Education regulations, but will also receive professional development through the MIT and Riverside professional learning community.

MIT believes that teachers are key to the success of student academic success. Student achievement and growth is dependent on the quality of the teacher. We believe our workforce should be as diverse as the students and community we serve. MIT will focus on attracting individuals from different backgrounds and experiences. All MIT staff will collaborate and learn through a Professional learning Community environment. Our teachers are critical to our mission, and dedicated to building a collaborative culture of talented people who will continuously improve the programs we deliver to our students.

The entire teaching and administrative staff will work as a collaborative team to identify their own effective best practices. The collaboration will exemplify the traits that need to be developed to help students succeed in college and career. The team will share expertise in planning, management, and instructional methodology. Informal and formal observations and evaluations will also guide

professional development opportunities. Teachers will be trained on the evaluation tool and goal setting process, and professional growth action plans will serve to improve instructional practices. Professional development opportunities from outside sources or school staff will be based upon proven, research-based best practices of instructional methodology.

Data-driven instruction

MIT will incorporate a school-wide system of assessment. MIT students will be given the ACT Aspire as a benchmark for Personal Learning Plans. MIT administration and teachers will use the results of the ACT Aspire testing to focus on preparation for ACT testing. Students will take the ACT Aspire twice a school year. Teachers will learn to use formative data early in a unit to make better choices about how to teach our students. To continue the process of learning, teachers need to gather data at key points in the unit in a variety of ways. Teachers will analyze this formative data and continue to make course corrections so that more students will reach proficient performance by the end of the unit (Gregory & Kuzmich, 2004). Teachers will be trained on strategies to ensure that objective criteria are the basis for instructional decisions. Common Core and Career Readiness Standards mandate students' deeper understanding of academic content and application of their knowledge and skills, and teachers need to know as soon as possible whether students are progressing. Teachers will be trained to use data to inform individualized and differentiated instruction. MIT will use best practices for analyzing formative data and gathering data at key points as set forth in *Data Driven Differentiation in the Standards-Based Classroom (Gregory & Kuzmich, 2004).*

Highly-effective instructional strategies

Maricopa Institute of Technology teachers will receive training in research-based instructional best practices to deliver content and curriculum to students. Teachers will receive training on the following instructional methodologies, which have been identified as best practices:

- Standards Based-Objective-Data Driven Instruction
- Project Based Learning
- Differentiation strategies
- Cooperative Learning Structures
- High Yield instructional strategies
- Blended Learning

Each of the instructional methodologies will be described in A.3.

Blended Learning structures

Blended-Learning is a combination of face-to-face instruction with online work. All MIT students will have a computer provided for them during the school day. Through online delivery, the student has control over time, place, path or pace of learning. MIT will use the Flex model and A La Carte model to individualize learning and meet student learning needs. The blended learning model fits the mission and vision of the school in meeting the individual learning needs of all students.

Blended learning holds incredible potential for increased student outcomes as well as increased capacity for student and teacher engagement. Schools can provide flexibility around the path, place, pace, and

time of learning. The nexus of the blended-learning course is the online platform that supports content delivery, administration, and asynchronous learning. Using a blended learning model, allows expanded course options and prepares students for college. All on-line courses will be taken in a classroom with an instructor supervising.

Students who do not have internet and computer access at home will be provided a laptop and computer internet access through the MIT Technology Department to be functioning at 100%.

Support for all students through a Personalized Education plan and College and Career Counseling.

MIT will use data to drive instructional practices and support accelerated learning for all students. Students at the bottom quartile will be identified through a diagnostic assessment (ACT Aspire) for Reading and Math. The diagnostic assessment and other previous school data will help the teachers and administrative team establish focused intervention and identify enrichment opportunities, and measure individual student growth data. This Act Aspire data will be collected during the Spring Forward Academy (eighth graders begin ninth grade) in May, and during the summer prior to the start of the 2016-17 School Year.

MIT will create a school-wide culture focused on college and career success. Visits to Colleges, Universities, and required internships, through community partnerships, serve to promote the continuous conversation of the importance of college and career success.

As MIT grows, a counselor will be hired to support students through the college application, ACT, PSAT and SAT test preparation, interview, scholarship application, and selection process. This is a vital link in helping our students and parents become familiar with college and career readiness, as many of our Riverside students will be the first in their family to attend college.

C. Rationale for the selected approach for the target population

Morrison Institute warns that "Arizona is at risk of becoming a second-tier state, educationally and economically" (Dropped, 2012, p.5). The warning was based on demographic projections and the gaps in access and attainment that exists in Arizona's educational institutions.

Academic achievement and career readiness

MIT will establish a rigorous and innovative approach to education by providing depth in the fundamentals of mathematics, chemistry, biology, physics, technology, and engineering. A recent U.S. Department of Education (2011) report states that only a small fraction, 8.9%, of Arizona College graduates enter STEM fields, of the 8.9%, only 23% who enter and graduate from STEM programs in college are minority. A recent U.S. Department of Commerce report projected that in the decade leading up to 2018, STEM occupations will grow by 17% (U.S. Dept. of Commerce, 2011). The implementation of a STEM focused education in MIT's particular geographic location is crucial to extending opportunities which will widen their individual, educational, and workforce opportunities and choices. Through interdisciplinary work, independent learning, and grade level independent projects, students will be formulating and solving problems, evaluating and incorporating reference materials appropriately, developing a logical and coherent argument or explanation, interpreting data or conflicting points of view, and completing their assignments and projects with precision and accuracy. Student facility with these strategies has been consistently identified as being centrally important to

college success (Conley, 2007). MIT is committed to preparing all students to attain these cognitive and metacognitive capabilities that are the heart of college readiness. Research shows that students who participate in STEM programs in high school are found to have higher GPA's, have better retention and are better-equipped for the rigors of college study (College Board, 2012). MIT's rigorous STEM program will assist students in preparing for career fields.

The rationale for using data-driven, personalized instructional program that makes use of formative assessment will generate growth and academic achievement for the target population. In addition, the Riverside administrative team has extensive experience in personalizing education and using formative assessment instructional practices to promote significant growth and academic success with their students at Riverside. With over 94% of students qualifying for free or reduced lunch and a significant population of English Language Learners, Riverside Elementary School District #2 has increased its A-F Accountability letter grade from a D to a C in the 2012-13 academic year. Reading and Math proficiency improved, as measured by the AIMS test, and the Riverside District Accountability letter grade went from a C to a B in the 2013-14 school year.

Students who take Advanced Placement and Dual Enrollment courses in high school are three times more likely to graduate from college (College Board, 2007); internships ensure students are ready for the workforce and receive more job offers; and highly qualified teachers who use blended learning to provide a personalized learning environment show up to three times more academic growth with their students (National Charter School Resource Center, 2012).

Conclusion

At Maricopa Institute of Technology, we will expand and increase participation of lower socioeconomic students in Science, Technology, Engineering, and Math subjects, Advanced Placement courses, and dual enrollment programs. Our teachers and administration will directly impact students' academic performance and behavior, and we will integrate social services into the educational system to increase success from Kindergarten through 12th grade.

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