Chicago Public Schools (CPS)
Magnet Schools Assistance Program

## TABLE OF CONTENTS FOR THE PROGRAM NARRATIVE

**Chicago Public Schools Magnet School Assistance Program**

## Introduction

Through the US Department of Education Magnet Schools Assistance Program (MSAP) grant, the Chicago Public Schools (CPS) proposes to transform three K-8 elementary schools comprised primarily of students of one racial/ethnic group and socioeconomic status into Science, Technology, Engineering, and Mathematics (STEM) magnet schools with diverse student populations. STEM-themed schools are a high priority for CPS and the City of Chicago due to their evidence base and proven track record of increasing academic achievement, an educational program that prepares students for careers in high-growth STEM fields, and increased demand from students, parents, and community members for this type of school. Central components of the CPS MSAP grant include: (1) multi-faceted marketing and recruitment plan; (2) evidence-based curricula, pedagogical instructional approaches, and aligned enrichment activities, (3) ongoing professional development and coaching for teachers, (4) training and support for school leaders, (5) integration with existing district infrastructure and programs; and (6) rigorous formative and summative program evaluation.

Many CPS schools are racially isolated and with overwhelmingly low-income student populations, leading to low academic achievement and a lack of postsecondary enrollment or completion. While currently lacking in diversity, the schools were selected to participate based on a balance of need and capacity, as well as their proximity to nearby communities from which diverse students can be recruited. The schools will join 14 other elementary and five high schools in the district's growing network of STEM-themed schools focused on preparing students for success in college, career, and community. The grant will address Competitive Preference Priorities 1-4.

## COMPETITIVE PREFERENCE PRIORITY 1: NEED FOR ASSISTANCE

**District Background:** Chicago Public Schools (CPS) is the nation's third largest school district serving over 381,000 PreK-12th grade students in 664 schools. Current district-wide enrollment is 47% Latino, 38% African American, 10% white 4% Asian, 0.2% Native American/Alaskan, and 1% Multi-Racial. Over 80% of students come from low-income households, 17% are limited English Proficient, and nearly 14% have special needs as identified and supported through Individual Education Plans (IEPs) (CPS, 2017).

According to census estimates, the City of Chicago had over 2.7 million residents in 2014. These estimates shows the city's population to be 32% white, 32% African American, 29% Latino, 6% Asian, and 0.1% American Indian (US Census, 2014). Despite the diversity of the population, Chicago's residential and employment patterns remain among the most segregated in the nation. Due to the city's legacy of segregation and its attendant loss of opportunity and prosperity, many students live in mono-racial / ethnic neighborhoods and attend schools with similar demographics. Far too many students do not have the opportunity to interact with, nor are exposed to, people from other racial or ethnic groups (Bowean, 2016). Over 80% of CPS students come from low-income households. It is clear that substantial gaps in equity still remain (CPS, 2017).

**Demographic Trends and Desegregation Efforts:** Prior to World War II, there were few minority students in CPS. Since 1930, African American student enrollment has increased from 6% to 38%, while white enrollment has decreased from 51% in 1963 to 10% in 2017. The share of Latino students continues to grow, and these students represent the district majority. In 1980, the US Department of Justice (DOJ) threatened to sue the Chicago Board of Education for operating a segregated school system. To address this, CPS signed a consent decree**,** a court

supervised agreement requiring the district to develop a desegregation plan for the city's public schools. In fall 2009, a federal court lifted the decree, opening the door for CPS to develop a voluntary plan for student assignment for magnet schools. With the consent decree lifted, CPS could not use race as a selection criteria in any school application. Under the voluntary plan, race has been replaced with socio-economic status aligned with the guidelines defined by the US DOJ and the US Department of Education (See Appendix for Voluntary Plan).

The development and expansion of magnet schools has been a powerful tool in combating racial and socioeconomic segregation in the district. Magnet schools have allowed CPS to improve the racial balance outlined in the consent decree.

CPS' and Chicago's demographics highlight two significant challenges related to reducing minority group isolation in schools - 32% of Chicago citizens are white, and yet this racial group represents only 10% of CPS students. Asian students are also under-represented, with a 35 percentage point differential between the representation of Asians in the city's population and in CPS. A significant percentage of students from these groups who will be targeted by CPS MSAP recruitment efforts for the new magnet schools have traditionally attended private and/or parochial schools. Secondly, there are broad geographic areas of the city in which African American and Latino students are concentrated residentially (95% or more of one group) in which they have little contact with children of other socioeconomic or ethno-racial groups (Griffin, 2015; Orfield, et. al, 2012).

Minority isolation is highly correlated with low academic achievement. Approximately 103,000 of CPS elementary students or (37%) attend schools with NWEA math and reading national attainment lower than the 50th percentile. Approximately 137,000 students (49% of all elementary) are enrolled in schools with attainment below the 60th percentile (CPS, 2016). Many

of these schools are concentrated on the South and West sides of the city, with nine communities (of the 77 defined city neighborhoods) without access to a single elementary school with attainment above 60%.

Moreover, a persistent racial / ethnic achievement gap exists among CPS elementary school students. In mathematics, white elementary school students in CPS are approximately twice as likely as African American students (79% vs. 40%) and approximately 50% more likely than Hispanic/Latino students (79% vs. 54%) to perform at or above the national average on the NWEA MAP (Belsha 2015; NAEP, 2015). The gap between white and African-American students has been consistent over the last three years, while the white-Hispanic gap has narrowed slightly. In reading, white students are about 75% more likely than African-American students (80% vs. 45%) and 60% more likely than Hispanic/Latino students (80% vs. 53%) to be performing at or above the national average on the NWEA MAP exam. Support from the US Department of Magnet Schools Assistance Program (MSAP) is needed to help close this achievement gap.

Through the MSAP grant, CPS seeks to transform three existing elementary schools - William H. Brown Elementary School, Claremont Academy Elementary School, and Joseph Jungman Elementary School - into high quality, in-demand STEM magnet schools. The three schools selected are currently not racially or socioeconomically diverse; however, based on the schools' locations and CPS' experience in establishing magnet schools, each holds significant promise to diversify their student populations with the implementation of the STEM theme and an effective marketing/communications campaign. As the table below demonstrates, there is significant improvement to be made in the diversity of each school's current student population:

| School | African American | Latino | White | Asian | Other | Low Income |
|---|---|---|---|---|---|---|
| Brown | 91% | 6% | 1% | 0% | 2% | 98% |
| Claremont | 83% | 15% | 0.5% | 0% | 2% | 98% |
| Jungman | 11% | 87% | 0.7% | 0.3% | 1% | 97% |

All three schools have a significant potential pool of racially and socioeconomically diverse students in the surrounding communities from which to attract students. Even accounting for a low transfer rate (historically, few students transfer from newly converted magnet schools), each will diversify significantly. Demographic shifts occur from new enrollment as lottery seats become available and school utilization increases. Five-year projections reveal that Brown, Claremont, and Jungman will each become significantly more diverse as a result of participation in the CPS MSAP grant (See Appendix for Table 3).

### *A. The Costs of Fully Implementing the Program as Proposed*

CPS proposes to establish three new whole-school Kindergarten-8th grade STEM-focused magnet schools. Projected MSAP implementation costs for all three magnet schools are approximately $3 million per year over the next five years. Funds will serve an estimated 1,652 students (by Year 5) in the three new magnet schools at a modest cost of $9,058 per student over the course of five years or an average of $1,812 per student per year.

The MSAP grant will fund the start-up costs associated with establishing rigorous STEM programs, including extensive professional development opportunities for teachers and administrators, field learning experiences for students, curriculum materials aligned to Next Generation Science Standards, materials and training for the innovation/STEM lab, updated technology, and activities to promote family engagement in the new schools. In addition, grant-funded personnel will be hired to develop, implement, monitor quality, ensure compliance, support and coach teachers, and manage the project at an average of $819,000.00 annually

(including benefits). Grant funds will support the materials and training needed to create a strong infrastructure for the STEM programs which can be sustained after grant funding ends.

Projected costs are based on an assessment of current facilities and resources in the selected schools, exemplar budgets of similar programs in existing high-achievement magnet schools, and current price quotes from external partners. The MSAP grant will not cover any construction, with resources devoted exclusively to magnet school conversion and implementation. All expenses requested are essential for effective implementation of the STEM magnet schools. Funds will not be used to supplant any expenses normally covered by the district. CPS will contribute in-kind costs, including the project director's salary, busing, and integration with the current school choice materials and lottery application process.

Funding for equipment purchases will be distributed across the five years of the grant to allow teachers and students time to become familiar with technology, provide appropriate training for teachers and students, and ensure that all equipment does not become obsolete by Year 5. For example, Creative Learning Systems provides training for teachers to understand the components of their system, one-to-one training with the teacher assigned to teach in the STEM Innovation Lab, and ongoing technological support throughout the school year. CPS teachers and administrators will also participate in excursions to surrounding schools that are using Creative Learning Systems. The STEM Innovation Lab requires students to work in pairs or sometimes in larger groups to complete the assignments or launchers. Students must work collaboratively, problem-solve and think critically to reach a common goal.

CPS currently operates 38 magnet schools and more than 80 magnet cluster theme-based schools. Many of the schools were begun with the assistance of federally funded grants, including MSAP and Voluntary Public School Choice. Thus, CPS is able to leverage lessons

learned for the effective, whole school transformations of the three schools that are the focus of this grant.

***B. Resources Available to Carry out Project if Funds under the Program were not Provided***

CPS is currently experiencing financial challenges driven by multiple factors that would prevent the implementation of the new magnet schools if funds from MSAP are not provided. As experienced by other school districts in the nation, the compounded effect of reduced federal and state funds to CPS and the decrease in city and state property taxes has negatively impacted the CPS budget (Ushomirsky and Williams, 2015). The State of Illinois currently ranks 50th of the 50 states in the percentage of education funding provided by the state - the state relies primarily on property taxes to fund public schools. A current budget impasse in Illinois (a balanced state budget has not been passed in 21 months) has created additional burdens for the district.

Despite reduced funding, however, CPS has improved academic performance, outpacing other urban districts in the growth of NAEP reading and math scores, and steadily increasing high school students' average ACT score. College-going and persistence rates have also climbed, and the amount of funding in college scholarships that CPS students receive is at an all-time high. While CPS is not fiscally positioned to fund the necessary start-up costs associated with establishing new magnet school programs, once implemented, the STEM programs will be sustained. The STEM programs will be placed in existing schools and rely on public funds to provide the standard per-pupil costs, which cover general expenses such as teacher salaries, textbooks, building infrastructure, and overhead. CPS principals have control over their school budgets and are able to allocate funds according to their school's specific needs. In addition, the CPS student-based budgeting system provides funding for schools based on the number of

students enrolled. As the new STEM schools attract an additional influx of students, their budgets will grow on pace with their student population.

***C. Extent to which Project Costs Exceed the Applicant's Resources***

The costs for implementing this project are reasonable, but as described above, due to multiple fiscal shortages, exceed the district's current resources to fund. The $14.9 million requested from the MSAP to implement the three new magnet programs represent expenses that cannot be covered by district revenues or school budgets, which have been reduced in recent years. Without supplemental funding, the district is unable to fund the positions, activities, supplies, and materials required to start up successful magnet schools.

Successful magnet schools require program coordinators/specialists, curriculum development, teacher and administrator professional development, STEM laboratory supplies, parental engagement activities, and strong marketing and recruitment strategies. School-based positions, in particular, as well as those of the STEM Project Manager and Project Coordinator, are not covered by the state nor CPS funding allocations, but are essential in developing and sustaining high quality educational opportunities offered through new magnet schools.

Once school programs are fully established and the infrastructure needed for strong STEM programming has been put in place, funding needed to sustain them will significantly diminish. Grant funds will cover costs to pay for external consultants who can provide focused, in-depth, on-going professional development opportunities for administrators and teachers beyond what can be provided by the CPS Office of Teaching and Learning. Large expenditures for technology, engineering materials, and supplemental supplies that will enhance and enrich math and science instruction are beyond the scope of CPS to provide. After the conclusion of the grant CPS expects to cover basic programming expenditures for each school. Costs such as

continuing professional and curricular development will be supported through district literacy, math and science development initiatives. The ability to purchase resources will come from each school's textbook and materials allocation fund. Historically, school-level positions are included within each school's operating budget at the conclusion of the grant. All proposed programs will continue to be supported after the conclusion of the grant by CPS. Funding for personnel and minimal additional finances will be allocated to the CPS Magnet, Gifted, and IB Department.

This isn't quite as tight as it could be. One might ask, if you can fund this down the road, why not now? I think you need to be just a bit clearer about what THIS funding will do that your existing budget line items cannot support, but what those line items can support to sustain the magnet programs, and finally why the resources requested were previously available when developing the other 38 schools but are no longer available.

CPS has a proven track record of leveraging MSAP and Voluntary School Choice grant funds from the US Department of Education to establish magnet themed schools that are then sustained post-grant award with district funds.

***D. Difficulty of Effectively Carrying Out the Plan***

Even as the district will be able to build upon its significant experience converting schools to themed magnet programs and implementing specialized curricula, it must train and guide current teachers and school leaders to become experts in STEM programming and effectively promote the schools to students and families. STEM programs necessitate intensive, specialized training in chosen methodologies, requiring an annual commitment of 70-90 hours of professional development per teacher. Traditionally, kindergarten through fifth grade teachers are trained to teach all subject areas without specialization in one specific content area, such as mathematics, which differs from the specialization of middle and high school teachers.

For the proposed new STEM magnet schools, however, professional development will include a series of sessions focused on conceptual understanding of science and mathematics concepts and how to use hands-on, student-centered, interactive strategies in instruction. Teachers will also receive training in social-emotional strategies that support students across various socioeconomic and racial groups. The CPS Multi-Tiered System of Supports (MTSS) provides a framework for delivering high-quality, differentiated instruction and targeted support for all students' academic, social-emotional, and wellness in all school and classroom settings. The MTSS process helps supports teachers in understanding the diverse needs and learning styles of students, inspires engaged learning and improves student achievement.

Tier 1 supports provide a strong foundation to ensure that all students experience the social and emotional conditions necessary for optimal learning and healthy development. This includes two core components: 1) a safe supportive learning environment; and 2) opportunities to learn and practice skills that support emotion awareness, self-regulation, goal-setting, empathy, cooperation, conflict resolution.

Beyond the strong research base linking improved academic performance (through rigorous curricula) to STEM magnet schools, there is a high demand from parents and students. The number of applications in CPS for STEM-themed magnet schools far exceeds the number of available seats, with 7,865 applications for STEM-based schools this year and just 1,267 available entry grade seats (CPS, 2016).

## COMPETITIVE PREFERENCE 4: INCREASING RACIAL AND SOCIOECONOMIC DIVERSITY

Within the district's voluntary desegregation plan (See Appendix), CPS identifies that a high percentage of students of a single racial or ethnic group denotes minority group isolation. In addition, CPS uses socioeconomic tiers (as a proxy for race) for each census tract to establish representation among the four different tiers to reduce, and/or prevent the perpetuation of minority group and socioeconomic isolation. Socioeconomic tiers are based on the following annual data sources:(1) median family income, (2) adult educational attainment, (3) the percentage of single-parent households, (4) the percentage of home ownership, (5) the percentage of the population that speaks a language other than English; and (6) a school performance variable (the average of district-wide academic tests for attendance area schools in each census tract).

## DESEGREGATION

### *(1) Effectiveness of the Plan to Recruit Students from Different Social, Economic, Ethnic, and Racial Backgrounds into the Magnet Schools*

An effective public school system that provides high quality educational opportunities to a wide spectrum of students is imperative to maintaining an economically healthy city. With an estimated 33% of all new Chicago jobs connected to a STEM field, a highly educated student population is essential. Segregated schools reduce quality of life and produce an economic cost, depressing workforce participation and significantly impacting wage mobility. Segregated schools reinforce segregated neighborhoods, as housing patterns largely mirror enrollment demographics (Rothstein, 2014). Magnet schools by contrast, explicitly seek to positively

decrease the number of hyper-segregated, mono-racial or ethnic schools, by offering world-class curricula and supplemental academic enrichment opportunities.

Experience demonstrates that by offering programs that are so outstanding and unique, such as STEM, the desire for high quality education overcomes existing families' initial apprehension about their neighborhood school changing focus, while attracting additional students who would not otherwise attend the school. By offering the in-demand STEM educational theme, the new magnet schools will draw students from multiple racial and socioeconomic backgrounds using an effective multi-faceted outreach plan (listed below) to families in the neighborhoods surrounding the schools, as well as the larger citywide CPS community. A special marketing and outreach plan will be implemented during the first year as the US Department of Education will notify applicants of awards after the CPS magnet application process has begun, and given the timing, these schools would not be included in that process. Schools chosen to participate in the CPS MSAP grant were carefully selected based on their proximity to diverse populations, and capacity to implement a rigorous STEM program of study. Taken together, these conditions will position schools to succeed in establishing high achieving, diverse magnet programs.

The comprehensive recruitment and outreach strategy, informed by previous magnet school recruitment efforts, will include: (1) public information meetings; (2) P.T.A. meetings; (3) meetings with civic groups, churches, and day care centers of various racial and ethnic groups; (4) radio Public Service Announcements (PSAs) and promotional advertisements broadcast by stations that appeal to various ethnic groups; (5) flyers distributed through local aldermanic offices, libraries, and community organizations; (6) student events that welcome students from other neighborhoods; (7) paid advertising in ethnic-based and neighborhood-focused

newspapers; (8) targeted mailings to zip codes surrounding new programs; (9) billboards; and (10) promotion through preschool programs with a focus on those within the six-mile busing radius. The STEM office will create a standard STEM presentation which will ensure the same information is being shared with the various stakeholders. The presentation will allow the STEM team to present simultaneous sessions to various groups. Presentations will take place at different times of the day to accommodate the needs of the community and in various locations including the new magnet schools, libraries, field houses, pre-schools, etc.

**Public Information Meetings:** Public Information meetings will be held in a variety of locations including the new magnet schools, libraries, pre-school programs focusing on those located in the targeted areas for recruitment. The meetings will share information regarding "What is a STEM school", the five year timeline of implementation, examples of what changes parents can look for in the classroom, and examples of field learning experiences. We will also discuss the application process and timeline.

**PTA, Local School Council Meetings, and Meetings with Civic Groups:** The Project Director and STEM Program Manager will attend PTA and Local School Council meetings to answer questions and share the STEM presentation. We will share information regarding the application process and timeline.

**Radio PSAs:** Announcements regarding the application process and timeline will be targeted to popular radio stations throughout the targeted neighborhoods. The STEM team will also seek out free advertising opportunities.

**Flyers:** CPS will target communities that surround MSAP schools for communication (i.e. flyers, postcards) about the new magnet programs.

**Student and Family Events:** Throughout the school year, the proposed three new magnet schools will host open houses and school tours for prospective parents. Informational community meetings will be held at various times of the day to discuss "What is a STEM school?" and the five-year plan that will be implemented. CPS will also provide "field trips" to current STEM schools to offer parents the opportunity to observe STEM schools in action (see plan of operation and project design for details).

**Paid Advertising:** Targeted advertisements regarding the application process will be placed on billboards, buses, and trains serving the surrounding communities.

**Targeted Mailings:** Families in the surrounding communities will receive a letter in the mail describing the new magnet schools, inviting parents to visit the school, and outlining the process for applying. In addition, students who are not offered a seat at other magnet or magnet cluster schools who live within the six-mile busing radius of the new programs will receive letters mailed directly to their homes informing them about the new STEM magnet schools.

**Promotion through Pre-School Programs:** The STEM team does not have the capacity to hold a meeting at each preschool location. We will locate field houses and other meeting spaces that are centrally located and serve the populations of several preschools. This method will allow us to host a meeting for the parents of several preschools at one time.

**Marketing Plan:** A dynamic marketing plan will be developed as part of the recruitment strategy to communicate the unique learning environment and program features to diverse groups of students from different parts of the city. The marketing plan will incorporate existing resources CPS has developed to inform parents about choice options available to children. These strategies have proven successful in boosting interest in the district's magnet programs as the schools received over seven applications for every available seat.

**Media and Internet:** Strategies include the following websites: the central public-facing CPS website (cps.edu); CPS Office of Access and Enrollment, which provides information on the different schools and school types and application process, and which hosts the portal through which families apply to schools; each school's website, and additional websites. Radio and television announcements and interviews and social and print media outlets will also be used to promote the new STEM magnet schools. The CPS Office of External Communications will be involved in assisting with setting up robo-calls, the use of the CPS social media outlets (e.g., Twitter, Facebook).

**Options for Knowledge Elementary School Options Guide:** Each fall, CPS offers the *Options for Knowledge Guide online*, which describes and promotes the elementary and high specialty programs offered by CPS including magnet and magnet cluster schools throughout the district to current and prospective families. The guides describes the application process, gives a brief overview of the themes offered in CPS as well as answers to frequently asked questions.

**Individual Assistance:** Parents interested in options other than their neighborhood school can receive assistance from staff in the Office of Access and Enrollment, via phone or in person by visiting CPS headquarters located in downtown Chicago. In addition MSAP district office staff and district magnet program staff, will offer information and guidance in the process of selecting and applying to proposed magnet schools. Parents can call for assistance or make an appointment to come downtown to CPS headquarters. Parents can also find information online at cpsoae.org which lists schools by type and announces open house events for schools.

**Effectiveness of Plan to Recruit Students from Different Backgrounds:** The proposed new magnet schools are racially isolated and under-enrolled. Based on the district's previous experience creating magnet schools with MSAP support (10 through grants in 2004 and

2007), schools are expected to make dramatic improvements in academic achievement, reduce minority group isolation, and increase enrollment. MSAP schools NWEA attainment outpaced the district non-magnet/cluster schools by 14% in reading and 10% in math. MSAP schools NWEA attainment for the three years increased by11% in reading and 7% in math. .Despite their current challenges, CPS leadership strategically selected participating schools based on their *potential* for success by considering the proximity of the school to racially diverse neighborhoods, new or well-maintained facilities, principal and teacher quality, parental demand for magnet programs, and a lack of area magnet schools.

**Data Analysis:** Data analysis consisted of (1) U.S. Census tract data on students and different racial/ethnic groups, (2) student enrollment of nearby public and private schools by race, and (3) public school enrollment of City of Chicago community areas by race. Each currently operating school has great capacity for additional seats due to underutilization. Each of the schools are located near the boundaries of highly diverse populations and easily reaching students within a 1.5-6 mile bussing radius, greatly enlarging the recruiting zone for these schools.

William H. Brown Elementary School is located on Chicago's Near West Side. Brown currently serves 255 students (1% white, 91% African American, 6% Latino, and 2% other) and has space for 270 additional students. There are an estimated 12,212 non-public school elementary students within a six-mile radius of Brown and in CPS district boundaries from which students will be recruited.

Claremont Academy Elementary School is located on Chicago's Southwest Side. Claremont currently serves 402 students (83% African American, 15% Latino, and 2% other) and has space for 300 additional students. Claremont will primarily seek to fill vacant seats with

additional Latino students from nearby areas. There are an estimated 12,623 non-public school elementary students within a six-mile radius of Claremont and in CPS district boundaries from which students will be recruited.

Joseph Jungman Elementary School is located on Chicago's West Side. Jungman currently serves 265 students (11% African American, 87% Latino, and 1% other) and has space for 160 additional students. Jungman will primarily seek to fill vacant seats with additional African American and white students from nearby areas. There are an estimated 14,978 non-public school elementary students within a six-mile radius of Jungman and in CPS district boundaries from which students will be recruited.

Parent demand for STEM-themed magnet schools is high. CPS received 7,865 applications for STEM-based schools this year 1,267 available slots CPS is highly optimistic about attracting white and Asian students from nearby private schools. High-quality magnet programs have long been a major pull from families seeking to enter (or reenter) CPS instead of staying with their private school option..

**Recruitment Strategy:** A comprehensive recruitment strategy is needed to ensure the magnet schools will attract students of diverse social, economic, ethnic, and racial backgrounds. Recruitment activities will commence immediately upon receipt of the grant and include: (1) public information meetings being conducted throughout the city prior to the lottery being held in May; (2) P.T.A. and Local School Council (LSC) meetings; (3) meetings with civic groups, churches, and daycare centers of various racial and ethnic groups; (4) radio PSAs and promotional advertisements broadcast by stations that appeal to various ethnic groups; (5) flyers distributed through local aldermanic offices, libraries, and community organizations; (6) student events that welcome students from other neighborhoods; (7) paid advertising in ethnic-based and

neighborhood-focused newspapers; (8) targeted mailings to zip codes surrounding the new programs; (9) billboards; and (10) promotion through preschool programs within the bussing radius. The campaign will reach potential students who will enter school in later years of the program via information sent to local pre-school programs.

Marketing materials will appeal to a wide range of audiences using easily understood, clear language. Messaging will emphasize each school's rigorous curriculum and warm atmosphere. Materials will also highlight future opportunities afforded to students including attending high performing high schools, gaining admission to and graduating from prestigious higher educational institutions, and maintaining employment in a high demand career.

The district's well developed CPS recruitment processes, ample experience in creating high impact materials, and significant relationships with the local media will ensure effective recruitment. One such example is the annual *Options for Knowledge* guide, (published each October) which details application procedures for each magnet program for which students may apply. The guide also explains the selection and notification process, and includes an application that may be photocopied by parents as necessary. Parents submit one application for each child to attend up to 20 magnet programs. Applications can be submitted either online or in hard copy, which parents can pick up from CPS central offices. The guide is dual language English-Spanish, with all applications also bilingual.

In September 2017, new magnet schools will celebrate a "Grand Opening." This will be a media friendly event featuring student artifacts, interactive activities, open houses, ribbon cuttings, and dedications. School Open Houses notifications will be posted on the central CPS and Office of Access and Enrollment websites. Each magnet school will coordinate ongoing public information activities, including publishing a quarterly magnet school newsletter for

enrolled students, their parents, and school staff. The Project Director and Program Manager will work with principals to host open houses and school tours. The Project Director will collaborate with the CPS Office of Communications to coordinate: (1) news releases in local newspapers and on the CPS website and (2) radio and television appearances.

It is anticipated that the combination of recruitment strategies, high quality educational programs, and the strategic locations of the schools themselves will increase enrollment to capacity with an increasingly diverse student population. In combination with the rigorous curricula implemented at STEM schools, this will lead to increased student achievement and positive long-term outcomes.

***(2) Fostering Interaction among Students of Different Social, Economic, Ethnic, and Racial Backgrounds in Classroom Activities, Extracurricular Activities, or other Activities***

The three proposed new magnet schools will follow CPS magnet policy and further promote desegregation to increase interaction among students of different social, economic, ethnic and racial backgrounds through: (1) innovative processes and structures that support changing schools' climate and culture, and (2) a strategic marketing plan (outlined above).

**Innovative Whole-School Processes and Structures:** A rich variety of experiences will be offered at the magnet schools to enable students, regardless of their backgrounds, to develop a common knowledge base. Instructional strategies will emphasize opportunities for students to work together in multicultural groups, actively engaged in learning together. Creation of a school culture centered on community (school staff, students, parents, community members, and partner organizations) will be developed to support the increase of interaction among both the newly diverse student population and diverse school staff and parents.

Classroom strategies will include the use of Kagan Cooperative Learning Structures which are designed to ensure collaboration among students, engage all students in the process of learning, and build a sense of community among students and teachers. These structures provide teachers with strategies needed to develop a classroom community supportive of collaboration and cooperation among students through implementation of a variety of methods to group students for projects and assignments. By using these strategies, students will be grouped to support collaboration and interaction among students of different ethnicities and socioeconomic status. While problem solving toward a common goal students will develop a deeper understanding for others and respect for different perspectives and viewpoints. Teachers who effectively use this strategy report highly productive student working groups and with rates of student engagement. Kagan structures increase academic achievement, improve multi-cultural relations, enhance self-esteem, create a harmonious classroom climate, reduce discipline problems, and develop students' social skills and character virtues. Longitudinal research studies show Cooperative Learning Strategies to have long-term positive impacts for low-income urban, minority youth (Barron and Darling-Hammond, 2008).

School level leadership which includes school principals, teacher leaders, and Local School Councils (LSCs) is essential to bringing about whole-school transformational change. An internal structure, the Continuous Improvement Work Plan (CIWP) helps inform this process, as key stakeholders plan, implement, assess and adjust strategies to achieve desired outcomes. Through the CIWP process, teams (principals, teachers, LSC members, parents, and other stakeholders), evaluate their school against best practices, determine annual priorities and goals, and develop action plans to address gaps preventing desired outcomes within priority areas. Schools use a variety of data to monitor progress towards desired outcomes. CIWPs are

communicated to school's Network (regional) Office, Central Office, and other stakeholders, going above and beyond State and Federal requirements of school improvement plans. The CIWP identifies resources, strategies, and action steps relevant to achieving each priority goal. The CIWP is an evolving document, subject to revision based on progress and lessons learned. The district and best-practice consultants regularly provide feedback, and offer ongoing resources and guidance to ensure improvement. The new magnet schools will use the CIWP planning tool to allocate and align resources to support the new STEM program. Activities will include professional development, provided by outstanding organizations such as the National Institute of Magnet School Leaders (NIMSL), which can support development of each school's capacity to effectively implement the STEM theme.

**Program Specific Supports that Promote Student Interactions:** The collaborative nature of STEM along with rigorous content naturally fosters dynamic interaction among diverse groups of students. STEM programs encourage inclusion and collaboration while working towards a common goal. In STEM Programs like Engineering is Elementary (EiE), Creative Learning Systems, and Pitsco, students work in teams to develop scholarly products that communicate knowledge growth and demonstrate mastery. The combination of Problem-Based instruction and iterative Design Cycles emphasize collaboration, teamwork, and planning within diverse learning groups to solve challenges modeled on real world situations and environments.

**Student Interactions in Real World Context:** CPS is committed to highly prepared, college and career ready students capable of transferring classroom learning into real-world application. All three new magnet schools will participate in a number of field studies. Field studies will be aligned to curriculum and stimulate student investigation as they seek answers to questions generated during the exploration process. As an example, the EIE Program (an element

of the overall STEM portfolio), begins each project with a case study of real-world engineering challenges affecting people of different countries and cultures. Engineering students can visit local and/or virtual locations such as fish hatcheries, aquariums, and weather stations to enhance and enrich their classroom project experience. Implementation of various STEM programs, along with the strategies listed above, will help establish a foundation in the school culture for positive interactions among students of different backgrounds.

***(3) Ensuring Equal Access and Treatment for Eligible Project Participants who have been Traditionally Underrepresented in Courses or Activities offered in the Magnet School***

**Ensuring Equal Access to Traditionally Underrepresented Participants:** The proposed new STEM magnet schools are located in communities traditionally underserved by magnet schools and composed of significant numbers of African American, Latino, and female students who are often underrepresented in STEM fields, particularly engineering, technology, and advanced sciences. CPS is committed to providing equitable access to the schools through implementation of strategies promoting both participation and success for all students. Equity strategies include: (1) selection of students by lottery with no academic requirements, (2) implementation of pedagogical practices expanding collaboration and inclusion among all members of the student body, (3) development of students' social-emotional skills, (4) professional development of teachers, (5) provision of transportation to all students living within a defined school radius (1.5 to 6 miles), and (6) active marketing of the new magnet programs to traditionally underrepresented groups using formal and informal channels.

**Student Selection through a Randomized Lottery:** All students will be selected from a pool of applicants through a computerized lottery system that does not include academic criteria (Competitive Preference Priority 3). Removing academic criteria enables greater equity for all

students, including students with special needs and English Language Learners (ELLs) within the selection process. Current student populations already attending the proposed magnet will be automatically admitted. Lottery spaces are reflective of a school's ideal capacity subtracted by each school's current / projected student enrollment. All enrollment is voluntary as a student applies based on desire to attend a high performing STEM magnet school.

Jungman Elementary will maintain an attendance boundary to ensure that students from the immediate community continue to have this school as a primary option. In this model, students within the neighborhood boundary are automatically accepted, with any remaining seats to be filled by students citywide. Given projected enrollment models and continued interest community interest, CPS expects significant room for growth for students outside the boundary to attend.

**Pedagogical Practices that Promote Inclusion and Diversity:** All schools will implement Kagan Cooperative Learning Strategies, which are effective in creating supportive environments in which all students feel valued (Barron and Darling-Hammond, 2008). These strategies require collaboration among students and provide teachers with specific grouping strategies that can be used to ensure students work with different classmates throughout the year. These strategies engage at least 50% of students in activity at one time, and students work in pairs or small groups when implementing the strategies. The strategies can be used with any age level, and teachers can use the strategies during parent engagement activities to build a sense of community in the school at large.

The CPS MSAP grant will expose students to rigorous STEM experiences daily, immersing them in inquiry-driven projects (many student-generated) that integrate all four content areas and stress practical, interrelated, real-life application. Problem- and Inquiry-based

curricula prioritize student choice and options, demonstrating to students that, regardless of background knowledge, race, ethnicity, gender, or disability, they can become what they choose. For example, the EiE curriculum has purposely selected engineering examples and design activities to be of interest to female and minority students. A key message of the program is that engineers are from all races, ethnicities, and genders. Each lesson unit works to demystify the engineering field for students, while simultaneously building confidence, knowledge, skills, and interest.

CPS is committed to serving all students equitably, including ELLs and students with disabilities. The new magnet programs will provide all students with access to the Common Core State Standards and Next Generation Science Standards by implementing instructional practices and materials that are adaptable and fully accessible to all students. Assistive technologies that provide functions such as translating languages and text-to-speech will be used as needed to ensure appropriate physical, cultural, and linguistic access to rigorous curriculum. ADA compliance is another essential element in creating equitable access. Any additional necessary upgrades will be funded and implemented through the CPS Office of Facilities and Operations budget. This will ensure that all students have equal access to the rigorous magnet school curricula and enrichment activities.

**Non-Cognitive Skill Development:** Schools will take advantage of social-emotional learning (SEL) supports. The CPS Multi-Tiered System of Supports (MTSS) provides a framework for delivering high-quality, differentiated instruction and targeted support for all students' academic, social-emotional, and wellness in all school and classroom settings. The MTSS process helps support teachers in understanding the diverse needs and learning styles of students, inspires engaged learning, and improves student achievement.

Tier 1 supports provide a strong foundation to ensure that all students experience the social and emotional conditions necessary for optimal learning and healthy development. This includes two core components: 1) a safe supportive learning environment; and 2) opportunities to learn and practice skills that support emotion awareness, self-regulation, goal-setting, empathy, cooperation, conflict resolution.

To promote safe, supportive learning environments, schools will implement talking circles as a universal strategy in all classrooms. Talking circles help build a sense of community in classrooms and throughout the school building. The talking circles allow participants to get to know one another and offer a safe place for students to share their viewpoints and opinions on various issues. Schools will also use peace circles to support conflict resolution when problems arise. In peace circles, students are taught strategies that can be used to resolve disagreements without fighting and violence. Peace circles hold students accountable for understanding the perspectives of others involved in the conflict and repairing the harm that was caused by their actions.

Additionally, all teachers will implement classroom-based programs to build social and emotional skills. Promoting Alternative Thinking Strategies (PATHS) is a program that builds social and emotional skills in grades K-5 through a series of developmentally sequenced lessons, which are delivered twice each week by the classroom teacher. PATHS includes connections to literacy and other areas of the academic curriculum. In rigorous clinical studies, the PATHS program has been shown to reduce aggressive behavior and depression; increase self-control and pro-social peer relations, emotion vocabulary, cognitive skills; and improve students' ability to tolerate frustration and effectively resolve conflict.

6th-8th grade teachers will implement Student Advisories using the Developmental Designs approach. This strategy ties social emotional skills into academic subjects and content, providing opportunities for student discussions that involve diverse perspectives and increase student interaction among various ethnic groups. Developmental Designs practices actively build skills and engagement in three key areas of school life: (a) social-emotional, (b) community, and (c) academic. Developmental Design was selected for its unique incorporation of pro-social skills, student accountability, and teaching effective communication. Developmental Designs builds on concepts such as creating student-designed classroom and school rules, adding the best elements of restorative practices such as classroom circles/councils, and the implementation of a mutually agreed upon social contract.

The CPS Office of Social-Emotional Learning will work closely with new magnet schools to promote students' non-cognitive skill development. A strong link between non-cognitive development and academic development lends support to a well-articulated SEL program available to all students. Magnet schools will seek to create a positive school culture in which the development of personal traits and behaviors such as leadership, accountability, adaptability, initiative / self-direction, cross-cultural understanding, responsibility, problem solving, communication, creativity, and teamwork are the norm.

**Teacher Professional Development:** CPS will offer professional development for school personnel to support the implementation of SEL practices, Kagan Cooperative Learning Structures, inquiry- and problem-based learning, technology integration, and curriculum development and implementation. All school teachers will participate in a full-day professional development session that focuses on talking circles. Additionally, 3-5 staff at each school will be trained to facilitated talking circles for conflict resolution. K-5 teachers will receive two days of

professional development to support implementation of PATHS, while 6th-8th grade teachers will receive two days of professional development to implement Developmental Designs and Face-to-Face Advisories. All teachers will also have access to quarterly coaching sessions to ensure continuous improvement and sustainability of the practices they learn in these sessions. Additionally, SEL specialists in each CPS network will provide coaching for the leadership team at each school to ensure fidelity of implementation by conducting walk-throughs and providing feedback on what they should see in the classroom related to social-emotional learning.

**Transportation:** Per CPS Policy 602.2, transportation services are provided to students who attend elementary magnet schools who live more than 1.5 but less than 6 miles from the school. Transportation guidelines may be modified to accommodate students with disabilities and students who face credible safety hazards, such as crossing gang territories, and do not have available transportation options.

**Strategies to Promote STEM to Traditionally Underrepresented Participants:** Additional strategies that will be implemented to promote equal access include messaging developed and delivered through the marketing and recruitment plan will feature diverse students, reiterate the appropriateness of STEM subjects and fields for all students, highlighting the growing number of local and national STEM college and career opportunities. Information sessions will seek to alleviate any potential concerns on the part of students and families who will be notified that students will be provided with mentoring and tutoring support as needed or desired. Public Information meetings, hosted by the MSAP district STEM team, will be held at different times of the day in various locations including the new magnet schools, libraries, pre-school programs focusing on those located in the targeted areas for recruitment. The meetings will include a presentation that addresses “What is a STEM school”, the five year timeline of

implementation, examples of what changes parents can look for in the classroom, and examples of field learning experiences. We will also discuss the application process and timeline. Meetings will be placed on the cpsoae.org website, via flyers posted in churches, stores, restaurants, and other gathering places in the targeted communities.

Further strategies for ensuring equal access and programming to underrepresented groups include: (1) seeking schools in communities without magnet schools; (2) identifying schools in communities with high low-income populations; (3) selecting schools in or near areas with a high potential for student diversity; and (4) selecting curricula that attract and engage a wide spectrum of students.

***(4) 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***

Within the district's voluntary desegregation plan (See Appendix), CPS identifies that a high percentage of students of a single racial or ethnic group denotes minority group isolation. CPS uses socioeconomic tiers for each census tract to establish representation among the four different tiers to reduce and/or prevent the perpetuation of minority group and socioeconomic isolation. Socioeconomic tiers are based on the following annual data sources:(1) median family income, (2) adult educational attainment, (3) the percentage of single-parent households, (4) the percentage of home ownership, (5) the percentage of the population that speaks a language other than English; and (6) a school performance variable (the average of district-wide standardized tests for attendance area schools in each census tract).

For the magnet schools proposed in this application, the initial lottery timeline will be slightly different for the first year, as the notification of the grant only occurs after the start of the

district's annual *Options for Knowledge* application process, in which the district releases information on all schools and programs (e.g., magnet, selective enrollment) that have seats for which students can apply. CPS conducts an "end of the year" lottery in May after the Options for Knowledge lottery has been held. This process is advertised through the CPS Office of Access and Enrollment website, advertisements, and parent alerts signaling the end of the year lottery process and application period to follow the regular *Options for Knowledge* process. The new MSAP magnet schools will be included in this process and will be designated as new schools on the application.

To ensure that students and parents have the maximum amount of information with which to make decisions about which school to attend, the district will notify the students that there are additional options available through robo-call and email. Additionally, students who apply through the *Options for Knowledge* process within targeted zip codes (selected around each school to maximize diversity and likelihood of students applying) will be mailed a physical application for new school options. Principals of the new magnet schools will hold open houses and make applications available at the conclusion of the event. This special, secondary application process will happen in April after notification for other schools has gone out. As with past CPS MSAP grants, this strategy of offering a second chance to parents to win a seat has proven to be a very successful. The information sessions will occur prior the end of the year lottery that is held in May.

## QUALITY OF PROJECT DESIGN

### *(1) Manner and Extent to which Magnet School will Improve Academic Achievement for all Students Attending each Magnet School, including in the Instructional Area(s) Offered*

It is imperative that CPS provide positive, engaging opportunities for our students –

91% who are minority and 80% who are low-income – that have the potential to change their life trajectories. A rigorous, relevant, inquiry-based, student-centered STEM curriculum grounded in hands-on engineering will provide instructional building blocks and collaborative learning environments to develop lifelong learners and 21st century global citizens. Through the new STEM magnet schools, students will gain the content knowledge, interest, confidence, abilities, and exposure to STEM careers as well as the higher order thinking skills (problem solving and critical thinking) necessary to propel them forward academically to succeed in college and work.

The new magnet schools will provide all students K-8 with increased access to rigorous, engaging STEM coursework and enhanced integrated, trans-disciplinary learning through: (1) engineering curricula; (2) inquiry- and problem-based pedagogical approaches; (3) supplemental science experiments; (4) technology integration across content areas; (5) enrichment experiences; (6) connections with STEM professionals of diverse backgrounds; and (7) professional development support for teachers, principals, and educational support staff – all research-based, as described below. The goal is to prepare students for success in high school, postsecondary education, and the workforce across all content areas, while inspiring them to pursue careers in STEM-related fields.

**Science:** Currently schools use rigorous science curricula approved by the CPS Office of Teaching and Learning Science Department such as *Full Option Science System* (FOSS) or *Science and Technology for Children* for Grades K-5 and *Investigating Earth Systems* (IES) or *Science Education for Public Understanding Programs* (SEPUP) units for Grades 6-8. All programs are inquiry-based and endorsed by the National Science Foundation as effective for diverse groups of students (National Research Council, 2013; Bayer Corporation, 2010). CPS will be distributing a RFP for vendors of textbooks aligned to Next Generation Science

Standards. Once vendors have been approved by CPS schools can purchase the new materials which will support the implementation of science and engineering practices across grade levels at all three STEM schools. CPS' Science Department will provide professional development to support the roll out of the new curriculum. As a STEM magnet school, each school's science curriculum will be infused with an engineering curriculum to be used in conjunction with the CPS-approved science curricula referenced above. Through engineering challenges, students will apply and reinforce science and math concepts that may otherwise seem abstract. Science curricula will also be enhanced with hands-on activities and experiments from vendors such as PITSCO, Lakeshore Learning, Hands2Mind, and Activate Learning which incorporate engineering activities within the units. For example, a Hands2Mind unit requires students to use their knowledge of friction, height, etc to design or "engineer" a ramp that will allow Roger Raccoon to travel the farthest distance. Students use the engineering design cycle as they work in groups to develop a plan, create a blueprint, test the ramp, make adjustments, and test again.

**Technology:** To meaningfully infuse technology into classroom instruction in all content areas, schools will adopt the Florida Center for Instructional Technology's Technology Integration Matrix (TIM). The matrix is both a guide and evaluative tool that, in conjunction with supportive videos and instructional materials, can be used to effectively integrate technology into daily learning, and monitor the level of integration achieved. Each school will administer the Technology Uses and Perceptions Survey (TUPS) which measures the current use and perception of teachers. The Lesson Observation Tool, which can be used during walk-throughs, provides formative feedback regarding the level of technology integration of a lesson and creates a profile that can be shared with teachers. Teachers can use the Lesson Planning tool

which helps teachers effectively integrate technology in a meaningful way into their daily lessons. All of these tools will be used to monitor technology integration.

To ensure that our students are versed in a variety of technological platforms, schools will purchase a combination of Apple and PC tablets and laptop computers to offer a variety of software experiences. These will be supplemented with manipulatives (including iPads and Chromebooks), software, carts for charging and storage, free educational resources, and peripherals, such as projectors. As students engage in engineering challenges and other project-based learning experiences, technology will be incorporated authentically for research, creating and delivering presentations, connecting students with content experts, using applications to crunch numbers and create graphs, writing and reflecting on findings, and blogging with peers and teachers. Each school will create a technology plan designed to ensure students have the ability to use technology in the following ways: 1) drawing tools, 2) digital presentations, 3) word processing, 4) storytelling through digital media, 5) programming and coding, 6) online collaboration, and 7) data collection and analysis. For example, students studying medieval times and the use of equipment for defense purposes might use a drawing tool to design a life-sized catapult. Within their small groups students will have time to test their design, revise as necessary before the final competition where groups will use their catapults to determine which design shoots the water balloon the farthest.

**Engineering:** STEM magnet schools will implement two nationally-recognized, research-based children's engineering curricula: (1) Engineering is Elementary (EiE) for Grades K-5 and (2) Creative Learning Systems' Smart Lab (CLS) for grades 6-8. Engineering will be a focal point for integration of the four STEM content areas, reinforcing science and math

concepts to other content areas via real-world, problem-based contexts, with daily technology usage.

A STEM Learning Lab will provide students with an innovative learning environment: aligned to Next Generation Science Standards (NGSS), with broad applications for science and math that afford students choices for learning, including technology-based lessons, and incorporate 21st century skills. Literacy skills are embedded in each launcher, students create ePortfolios, and must document their work daily. Students must work in pairs or small groups to problem solve and complete the hands-on, interactive launchers.

This program benefits students by providing student choice, (e.g., several differentiated access points for a variety of learners, hands-on/minds-on activities). CLS offers over three hundred learning launchers in various subject areas and provide differentiated levels of activities. Students can choose launchers related to alternative renewable energy, computer graphics, mechanics and structures, and scientific data and analysis to name a few. Students are able to choose the launchers in which they are interested and want to learn more about. For example one launcher requires students to use the West Point Bridge Designer program design a bridge strong enough for cars and trucks to cross without the bridge collapsing.

Teachers attend professional development which supports the transition from teacher to facilitator. CLS provides two days of training as a group, and works with the teachers of the STEM lab on a one to one basis for two days. At that time CLS and the teacher determine the order that the beginning level launchers will be used, a schedule to introduce students to the STEM Lab, align launchers to the curriculum, etc. Ongoing online and technical support are provided throughout the year. Teachers benefit by becoming facilitators of learning within this

environment. Students have greater ownership over their own learning, demonstrating knowledge and mastery through presentations to their teachers and peers.

EiE and CLS are research-supported, demonstrating that through participation, students develop a better understanding of science, engineering, math, and technology concepts; show more interest in STEM careers (compared with control groups); and build the higher order thinking skills (i.e. critical thinking and working effectively in teams) required to master the Common Core State / Next Generation Science Standards, and succeed in college and the workforce (Change the Equation, 2013; LaChapelle, 2008; Interactive Educational Systems Design, Inc., 2011). Evidence also indicates that EiE can narrow, or even close, the achievement gap between students of different racial and socioeconomic backgrounds (Cunningham, 2009).

**Mathematics:** Each school's mathematics curricula, such as Go Math, enVision Math 2.0, –*Everyday Mathematics 4* (Grades K-5) and *Go Math* (Grades 6-8) – will be enhanced and brought alive through EiE and CLS. In addition, the STEM magnet schools will provide opportunities including 8th grade Algebra I to prepare students for the advanced math required for AP courses, the high school engineering program, and ultimately STEM-related college degrees.

**Training and Pedagogical Methods:** Teachers will receive training and be supported through school-based collaborations to implement three interrelated evidence-based educational approaches – inquiry-based learning, problem-based learning, and cooperative learning. This approach will provide students regular opportunities to work independently and in groups, to solve problems relevant to the world around them. The selected pedagogical methods have been shown to simultaneously develop problem-solving strategies and disciplinary knowledge bases and skills (Bransford, Brown, and Cocking, 2000; Clark, 2008; Lemke and Coughlin, 2006; National Research Council, 2011, 2000). These approaches will be embedded within EiE and

CLS engineering curriculum challenges that participating teachers develop as part of the curriculum for the new STEM magnet schools.

- ***Inquiry-based Learning:*** Each school's STEM program will weave inquiry-based learning throughout the curriculum development process and include theme-specific material, Common Core State Standards, NGSS, and district priorities. Inquiry-based instruction mirrors how people learn naturally and promotes organic development of conceptual understandings, metacognition and linkage of classroom knowledge to real-world contexts (National Research Council, 2000). Adapting Inquiry-based instructional concepts to STEM and broader range of subjects will an important focus for teacher professional development activities.
- ***Problem-based Learning:*** (PBL) organizes curriculum and instruction around carefully crafted problems, whereby students learn valuable lessons by seeking and creating solutions. Students develop critical thinking, problem solving, and collaborative skills as they identify problems, formulate hypotheses, conduct data searches, perform experiments, formulate solutions, and determine the best "fit" of solutions to address the conditions of the problem. PBL nurtures collaboration among learners, increases motivation, as students learn both content and skills. Training for this program component will be provided by the Illinois Mathematics and Science Academy (IMSE) located in suburban Aurora, Illinois.
- ***Backward Curriculum Design:*** The magnet schools will utilize a backward curriculum design model incorporating the work of Wiggins and McTighe. This model uses three interrelated questions to guide curricular development beginning with the end goal.

Together, the answers to these questions will guide curriculum design, thus ensuring that all students learn and do so at high academic levels.

The design of the proposed new STEM magnet school model is grounded in the following tenets: (1) all students must have access to a high quality standards-based curriculum to develop the knowledge and skills to master STEM concepts and processes; (2) if students are engaged, particularly early in their academic careers, they are more likely to choose a STEM college major and career (Tai, 2012; Engineering is Elementary, 2012; Sadler, 2012); (3) students are more likely to be engaged when learning is personally relevant; (4) gaining deep understanding of STEM content areas requires hands-on authentic experiences that transform abstract theories into concrete concepts; and (5) for traditionally underrepresented groups in particular, students will benefit greatly from connections with Black, Latino, and women STEM professionals.

This theoretical approach aligns with all key elements of the National Academies Framework for Effective STEM Education, as illustrated below:

**Element 1: Coherent standards and curricula.** STEM education will be based on Common Core State and Next Generation Science Standards. **:** In Grades K-5, students will engage in Engineering is Elementary (EiE), and in Grades 6-8, the curriculum will be Creative Learning Systems' Smart Lab (CLS). The schools will also supplement their regular math and science curricula with EiE, CLS, and PITSCO materials and implement the Technology Integration Matrix and its suite of support tools. Faculty at the proposed new STEM schools will begin professional development in fall 2017. The new STEM elementary magnet schools aim to prepare students for success at Early College STEM high schools, which integrate high school

college prep, college coursework, and workplace experience in STEM fields, throughout the district.

All core mathematics curricula to be used in the three new magnet schools are reform-based instructional materials, recommended by NSF and the Illinois State Board of Education (ISBE). Schools can select from the following research-based math programs: *Everyday Mathematics, Go Math, enVisionmath2.0 (K-5), Go Math or Connected Mathematics 3* (6-8). Students at all three schools will make gains through these curriculum options, attaining the advanced levels of mathematics needed to succeed AP and IB mathematics and engineering programs.

Science curricular options are research based and NSF supported. CPS will soon distribute a RFP for vendors of textbooks aligned to Next Generation Science Standards. Once vendors have been approved by CPS schools can purchase the new materials which will support the implementation of science and engineering practices across grade levels at all three STEM schools. CPS' Science Department will provide professional development to support the roll out of the new curriculum. The new curriculum will embed hands-on inquiry and interdisciplinary projects within multi-sensory observation and collaborative learning groups. For grades 6-8 science, schools can choose from a number of curricula aligned to the NGSS. Schools typically use a wide variety of NGSS-aligned curricula and include hands-on activities. Inquiry-based learning is a central tenant, as students investigate scientific problems, increasing awareness around global issues with sound scientific methodology. The NGSS aligned materials embed science and engineering practices in the curriculum as well as the cross-cutting concepts which allows teachers to explicitly teach in a manner that shows the connections between these three areas.

**Element 2: Teachers with high capacity to teach in their discipline.** Teachers to the magnet program will be hired according to CPS guidelines. All teachers must hold a valid Illinois State certificate and middle school teachers must be endorsed in the specialty area in which they teach. We will look for teachers who currently use hands-on, interactive structures in their classrooms, have demonstrated success in differentiating instruction based on student needs, and integrate technology in their instruction and classroom experiences of their students. Interviewees will be required to model a STEM integrated lesson to the interview panel. All teachers will participate in 70-90 hours of professional development annually, actively engage in school-based Professional Learning Communities (PLC), and receive coaching and evaluative feedback to hone practice. Professional Learning Communities create a space for teachers to analyze student work and instructional practices, provide peer feedback on instruction, and create common units and assessments both vertically and horizontally across classrooms and grade levels. Schools have implemented weekly common planning times and at least one meeting a month will function as a PLC planning meeting. PLC meetings will have an agenda that is distributed in advance, minutes will be kept that document the conversation, activities and person responsible.

**Element 3: A supportive system of assessment and accountability.** CPS currently assess students using the Northwest Evaluation Association (NWEA) Map assessment (grades 3-8), the Partnership for Assessment of Readiness for College and Careers (PARCC) (grades 3-8), the NWEA Map for Primary Grades (MPG) (grades K-2), and TRC+DIBELS (grades K-2) up to three times annually in reading and mathematics. These assessments gauge student progress, identify skills deficiencies, and develop strategies to help students meet and exceed standards. To assess science, CPS offers the ISBE Science Assessment (aligned to NGSS) (grades 5 and 8) and

the NWEA Science test (grades 3-8). In addition, teachers administer frequent formative assessments (many of which are curriculum-embedded) to determine whether students have absorbed material. As part of the monitoring process we will analyze student achievement in science via grades received and look at the correlation between specific math skills/strands in testing as they align with science practices and instruction. Teachers will use the Technology Integration Matrix (TIM) to assess progress in technology integration. In regular monthly PLC meetings and one-on-one coaching sessions provided by the Integration specialists at the school and the STEM Program Manager, teachers will receive support in interpreting results, generating solutions, and sharing effective practices.

**Element 4: Adequate instructional time.** To complement the new curricula, participating magnet schools will partner with local out-of-school-time STEM organizations, such as Project Syncere, the SMART Grid Project, and the Chicago Architecture Foundation. External providers will serve as resources for student field experiences and offer additional teacher training to deepen and extend STEM experiences for students. CPS expects to provide field experiences with the Museum of Science and Industry, Chicago Architecture Foundation, and traveling science exhibits, among other opportunities. Enrichment activities, such as career days including using SKYPE to speak with STEM professionals at work and STEM challenge days, will be provided during the school day to ensure that all students are able to participate and interact with one another. This is yet another critical element of an effective, comprehensive STEM education (Afterschool Alliance, 2011; National Research Council, 2011).

CPS STEM-themed schools have been demonstrated to boost student achievement in other CPS schools and generate strong parent demand. CPS has grown the number of elementary schools offering STEM focus from one school in 2007 to 14 schools as of 2016. This increase is

based on growing recognition of the importance of STEM focused schools, as well as rapidly increasing parental demand. As previously stated, demand far outpaces supply, and with the limited availability of STEM elementary seats around the city, expansion through the MSAP is a high priority.

MSAP supported CPS STEM magnet school expansion, with the rapid success of Davis STEM Magnet an excellent example. In 2007 Davis was on probation. Today, Davis is a Level 1+ school (the highest CPS performance rating, taking into account both growth and achievement) with 81% of students achieving at or above the national average in reading and 70% in math attainment. As measured by NWEA, 91% of students are meeting or exceeding their growth targets in reading and 94% in math. Davis' growth and attainment are far above average. Of the 12 STEM Initiative schools opened in the 2013-14 school year, 100% experienced average to above average growth for students meeting or exceeding their growth targets on NWEA.

In the seven areas measured using the REACH Teacher Evaluation Framework standards growth in teacher practice in the STEM Initiative (SI) schools has outpaced the district. The seven areas measured are: (1) demonstrating knowledge of content and pedagogy (1A), (2) designing coherent instruction (1D), (3) designing student assessment (1E), (4) establishing a culture for learning (2B), (5) using questioning and discussion techniques (3B), (6) engaging student in learning (3C), and (7) using assessment in instruction (3D). SI teachers outpaced the district by 0.05 in areas 1A and 1D, 0.12 in area 1E, 0.16 in area 2B, 0.09 in 3B, 0.15 in 3C and 0.10 in 3D.

All three of the proposed schools will open in fall of 2017. By the conclusion of the grant period in June 2022, the STEM curricular theme will be fully implemented in all grade levels in the three conversion schools.

**Additional Core Program Components:** Proposed magnet schools will share in the implementation of research-based instructional practices, core content curricula, and evidence-based organizational restructuring techniques. Components have been selected based on evidence or indications that they will increase student achievement in theme-related STEM content, as well as other content areas needed to prepare students for success in high school, college, and career.

- ***Authentic Formative Assessments:*** Instructional staff will add alternative assessments to the currently used standardized testing instruments. Alternative assessment measures such as projects and portfolios allow opportunities for parents, staff, and students to interact around concrete examples of student work. In science primary students discussing weather conditions in Chicago will determine information to consider when building a house. They will test various materials to determine those that absorb or repel water and those that are most resistant to wind. Based on the results of their tests students will design a house to can protect them from the elements and write an explanation that explains the design.
- ***Mentors and Tutors:*** Mentors may be either older students or adults from external partners, businesses, organizations, universities, parents, and community members. They will work with students to assist in academic pursuits and act as role models for achievement and/or career success. Older students in specific theme magnet programs will assist students in developing non-cognitive skills such as positive study habits. Their

primary role will be to assist students in mastering academic concepts. CPS will recruit a diverse group of mentors and tutors that represent the student population, who will work with students based on need. Each of the schools is located near high schools and we will recruit students from the high schools to "buddy up" with a few middle school students and serve as mentors for which they can earn community service hours. Claremont and Brown are located in walking distance of a city college campus and we will also recruit students from these schools to serve as mentors and tutors. Due to location students would be able to come to schools during the day when they have breaks in their schedules. CPS will work with both the high schools and colleges to plan shadow days for students where they can attend classes with their tutors and/or mentors. Our goal will be to provide support during the school day as well as after school hours. In addition we will work with the External Partnership Office to determine organizations such as churches, boys and girls clubs, etc. that offer after school tutoring and ensure that parents are aware of these opportunities and assist parents as needed in applying for the programs located in their home neighborhood. Our goal will be to provide tutoring throughout the year and to incorporate the mentoring programs that CPS offers such as Becoming a Man (BAM) into these schools.

- ***Before- and After-School Programs:*** Future Cities, Samsung Girl Empowerment, and Lego Robotics are examples of clubs which can provide no cost opportunities for children of different backgrounds to extend their exploration of engineering, social studies, mathematics, language, and science beyond the school day that relate to the new STEM theme. These clubs also provide students the opportunity to work together to achieve a common goal while having fun regardless of ethnicity or socioeconomic

status. Participation in Lego Robotics requires students to complete a research paper and project related to the theme and present their robot design to the judges as a team. Future cities requires students to explain their designs to adult engineers as well as prepare a research paper.

- ***Summer Immersion Camps:*** Beginning during the summer of 2018, students enrolled in the magnet schools will be eligible for theme-specific Summer Immersion Camps held at the new STEM schools. The camps will be held during June and July based on access to the building. The camps are designed to offer new students to the schools the opportunity to experience STEM prior to the start of school in September and to extend the learning of students currently attending the schools. This allows students to get to know their classmates prior to the start of school and make friends while developing an understanding of the STEM program. Due to the inexpensive nature of the materials and supplies needed to run the program we hope to provide this opportunity to all interested students. The programs will be planned by staff from the new magnet schools in conjunction with business/community/university partners. The University of Chicago receives federal funds that allows them to support this type of programming at no cost to CPS. The Summer Immersion curricula will extend the school program, building upon the lessons learned during the year and preventing summer learning loss. Each session will be held for one week and we will offer two sessions. All grade levels are eligible to participate and the camp will feature different hands-on activities to encourage participation. The camps offer a fun-filled week to get them ready for school and excited for the new educational opportunities available to them.

Through this model, students continuously acquire and deepen their knowledge and skills in science, technology, engineering and mathematics beginning in kindergarten. The STEM model leverages and amplifies current CPS instructional learning sequences by integrating core course offerings (i.e. vertical alignment of mathematics and science to conceptually build off each other) and by offering additional classes in engineering and technology beyond traditional offerings, meaning each student will receive an additional 150 minutes per week in STEM-related content. Students at STEM schools solve real-world, global problems, integrating multiple subjects in a highly interactive and engaging student-centered learning environment. A focus on problem-based learning comes through various design challenges.

To implement this new approach, each school has committed to: (1) teach content areas, such as combined math/engineering and science/engineering to show the strong connections between the disciplines and allow students to apply their knowledge; (2) use technology daily and in innovative ways to test students' ideas and thinking; model potential solutions to global problems; predict, analyze and explain real-world phenomena; collaborate with peers and other students around the world; (3) explicitly teach the nature of science and math and the processes of engineering to help students develop a rich understanding of these disciplines; and (4) embed Kagan Cooperative Learning Strategies and problem-based learning into the instructional culture of the school.

**Improvement of Student Achievement in School's Instructional Area:** The instructional materials selected for the three STEM schools are NSF approved and are conceptually rigorous, designed to support high order learning and provide opportunities for student collaboration. For mathematics, schools can select from *Everyday Mathematics, Go Math or enVisionmath2.0* (K-5) and Go Math or *Connected Mathematics* (6-8). All curricular options

focus on student understanding of mathematics at the conceptual level and encourage students to explore the subject in real-world contexts. In this way, CPS prepares students for the application of math-related knowledge into science and engineering. For science, schools will use a modified sequence of thematic units from their current curriculums *Full Option Science System* (FOSS) and *Science and Technology for Children* (STC) at the K-5 level *and Investigating Earth Systems* (IES) and *Science Education for Public Understanding Programs* (SEPUP) at the 6-8 grade level until the new NGSS aligned curriculum is provided. For Engineering, K-5 students will use Engineering is Elementary (EIE) instructional materials to develop a strong understanding of the processes of science. In EIE, storybooks featuring children from a variety of cultures and backgrounds introduce students to engineering problems. Students work in teams to apply their knowledge of science and mathematics to solve a hands-on engineering design challenges using inquiry and problem-solving skills. This model prioritizes creativity as they design, create, and implement possible solutions.

For grades K-5, the CPS STEM program thoughtfully aligns the science units and EIE units so students are provided with daily opportunities to learn concepts in science and apply their knowledge of those concepts in design problems in their engineering class. For grades 6-8, Creative Learning Systems' Smart Lab (CLS) has cutting-edge instructional materials that address the interest and energy of middle school students, while incorporating national standards in mathematics, science, and technology. The CLS curriculum focuses on engaging, hands-on, minds-on, project-based activities and uses applied technology to reinforce academics and build next generation skills; students are met where they are through content that ramps up or down and allows students to take projects in the direction they are most interested in (based on their interest) (Creative Learning Systems, 2016). The CLS focuses on building communication and

collaboration via small-group problem solving. CLS focuses on a variety of different systems of technology around which the curriculum is based, including: (1) Alternative and Renewable Energy, (2) Circuitry, (3) Computer Graphics, (4) Digital Communications, (5) Mechanics and Structures, (6) Robotics and Control Technology, (7) Scientific Data and Analysis, and (8) Software Engineering.

All students in these programs will understand and apply the steps of the Engineering Design Cycle. The Engineering Design Cycle incorporates the constructivist view of learning, that knowledge is actively constructed by the learner, as he or she experiences the world. The Engineering Design Cycle CPS has adopted has six steps: (1) *Ask*: What is the problem? (2) *Imagine* solutions: use your productive thinking talent to list many varied and unusual ideas, (3) *Plan:* the solution you think is best (4) *Create:* follow your plan, (5) *Improve:* modify your plan or design to make it better, and (6) *Share*: communicate your results/what have you learned.

Through EiE and CLS, students will build their capacity to problem-solve, question critically, work effectively in teams, and persevere through difficult tasks – life skills which extend beyond science and mathematics into additional content areas and beyond the classroom (Change the Equation, 2013). CLS is built on strong research that finds that SmartLab's basic model can improve academic achievement in math and science, and increase student motivation and engagement (Interactive Educational Systems Design, Inc., 2011). Multiple studies have found that students who completed the EiE curriculum developed a better understanding of science, engineering, and technology concepts and showed more interest in science and engineering as careers than students in control groups who received only science instruction (Change the Equation, 2013; LaChapelle et al., 2008). Results suggest that using EiE materials

can narrow, or even close, the achievement gap between children from high and low socioeconomic backgrounds (Cunningham, 2009).

The CPS district-wide approach to technology curriculum seeks to integrate technology knowledge and skills into the core classroom experience. To support this vision, CPS aligns to the Technology Integration Matrix (TIM) developed by the University of South Florida. TIM incorporates five interdependent characteristics of meaningful learning environments: active, constructive, goal directed (e.g., reflective), authentic, and collaborative (Jonassen, Howland, Moore, and Marra, 2003) and associates five levels of technology integration (i.e., entry, adoption, adaptation, infusion, and transformation) with each of the five characteristics of meaningful learning environments. Together, the five levels of technology integration and the five characteristics of meaningful learning environments create a matrix that defines different stages of technology integration.

This matrix is used by teachers to inform design of learning experiences and assess current the level of technology integration within the classroom. The matrix encourages technology integration within every classroom and not just resources within the computer lab. Within the STEM program, a technology class will provide content-based knowledge and skills (typing, Google Drive, Digital Citizenship) that classroom teachers can leverage within the teaching of core subject matter.

In addition to a rigorous strongly aligned course sequence, each school will have two engineering labs and a computer lab. A K-5 Engineering Lab will promote an active problem-based learning environment that will provide students with access to a variety of traditional and innovative construction / building materials. A second Engineering Center will house the CLS (grades 6-8) Lab. It will contain many of the same features as the K-5 lab but also be equipped

with the equipment / materials necessary to support CLS curriculum. Lab spaces provide students and teachers space to tinker, explore, collaborate and learn together.

The enriched STEM elementary experience offered at new magnet schools will provide students with a well-rounded education, preparing students for the advanced mathematics and science courses in Mayor Emanuel's K-14 STEM Pathway Initiative. This Early College program is designed to allow students to take college level courses during their high school years leading to an Associate's Degree. STEM elementary schools provide spark lifelong interest and develop the knowledge base for students to pursue the opportunities afforded by the K-14 STEM Pathway Initiative.

***(2) Extent to which Applicant Demonstrates it has the Resources to Operate the Project Beyond the Length of the Grant, including a Multi-Year Financial and Operating Model and Accompanying Plan; Demonstrated Commitment of any Partners; Evidence of Broad Support from Stakeholders Critical to the Project's Long-Term Success***

**Likelihood of Project Sustainability:** CPS is committed to fostering meaningful interaction among students of different racial and ethnic backgrounds, beginning in the earliest years of their education. The district has a proven track record of creating diverse, high-achieving, sustainable magnet schools through the effective use of MSAP, city, state, federal title funding, and private sources. CPS currently operates 38 magnet elementary schools, some of which have served the district children since the 1980s. These schools are open to children from across Chicago, with no entrance requirements,and are among the district's shining stars of innovation, diversity, and achievement.

Federal funds are requested to support program components that are beyond the capacity of CPS to provide. The infusion of federal funds will give the district the ability to implement

high quality educational programs capable of attracting students of all racial, ethnic, and socioeconomic backgrounds to create diverse, dynamic school settings. The majority of funds requested from MSAP will cover one-time costs associated with establishment of new magnet programs. Once established, ongoing costs above and beyond the operation of a typical school will be nominal. Costs will be subsumed by schools and district as part of their annual operating budgets.

Of the ten magnet schools CPS created with MSAP grant funds: (1) all still operate, (2) 8 of 10 improved academically, (3) eight that started on probation are now off probation, and (4) nine out of ten maintained their original magnet theme focus. The district's track record of sustainability demonstrates that, if funded, the three new STEM magnet schools created through this grant will be sustained well beyond the grant period.

**Applicant Commitment to Magnet Schools Project:** CPS and the City of Chicago are fully committed to implementing the proposed magnet programs as part of a larger strategic plan to establish K-12 STEM pathways across the district (see Appendix for letters of support from the City of Chicago and CPS administration). The commitment to STEM originates from a need for CPS students, who lag behind their peers nationally in science and math, to gain exposure to a rigorous, engaging STEM curriculum. The ultimate goal is to prepare youth with the knowledge and skills to be competitive in today's global marketplace, and keep them in Chicago with high quality jobs. As described in the Plan of Operation and Quality of Personnel, CPS has allocated substantial leadership and staff time in-kind to develop and implement the new magnet schools.

Both during and after the grant period, the district will provide operating support for magnet programs equal to allocations for regular school programs. As with all schools in the

district, new magnet schools will continue to receive district allocation for staff salaries and benefits, public utilities and energy, materials and supplies, capital outlay, purchased services, and instructional budgets. The school budgets for each new magnet school for the 2017-18 school-year are included in the budget narrative.

The total cost of the basic program will be the responsibility of the district. Per CPS Policy 602.2, the district will also fund the costs of busing. Local funding for the program consists of the State Title I Replacement Funds, Magnet and Specialty Programs Funds, Race and National Origin Desegregation Funds, and Central/Citywide and District Support.

None of the items requested in the grant budget supplant committed funds. All expenses are necessary to provide the highest level of instruction to create world-class educational options capable of attracting a diverse student population, and to guarantee the success of the magnet schools. With the infusion of supplemental, theme-specific instructional materials and resources, evidence-based and promising core content curricula (such as *Every Day Mathematics*, *FOSS*), specialized labs, professional development activities and coaching provided by the Program Manager/Content Specialists, and supplies needed to establish exemplary magnet programs, the proposed schools will become achieve their full potential.

The goal of this application is to request start-up funding to supplement existing district resources to provide the additional staff, teacher training, curriculum development, equipment and technology, instructional materials, and marketing materials necessary for the implementation and success of magnet programs. With MSAP support, CPS is committed to the implementation and long-term sustainability of the magnet programs. After MSAP funding ends, CPS will provide ongoing support.

**Other Resources to Continue Support After MSAP Assistance Ends:** The district will continue support for the magnet school programs through money received from the following programs: State Chapter 1 funds, Federal Title 1 funds, local taxes, and grants. Local funding for the programs consists of the State Title I Replacement Funds, Magnet and Specialty Programs Funds, Race and National Origin Desegregation Funds, and Central/Citywide and District Support. A significant portion of the items requested in the MSAP budget are supplies, staff, professional development, and curricular development. At the end of the project, the district will assume maintenance and replacement costs of materials. In addition, CPS will continue to contribute capital improvement funds to the schools for maintenance, equipment, and facilities upgrades.

At the end of the project, a full menu of curricula will be developed, and faculty and staff will be trained in program implementation. The same level of training will not be necessary on an annual basis. The district will assume the costs needed for regular curricula review, ensuring ongoing teacher professional development, and for training new staff members.

At the end of the grant cycle, ongoing costs for public information / recruitment campaigns will be substantially reduced. The most effective recruitment techniques will be identified and incorporated into the larger annual CPS recruitment process. Ongoing expenses be much lower moving forward as the district will already have materials that leverage the best-practices developed.

Although personnel costs are generally considered continuing costs, the project has be sequenced so that many requested personnel positions will no longer be needed at the end of funding, or that costs can be absorbed by the school. At the conclusion of the grant, CPS will assume the costs of required personnel and secure the funds needed to continue all three magnet

school programs. Assumed costs include: personnel costs, maintenance of equipment, curriculum, follow-up professional development, and recruitment.

The district is committed to assuming in-kind costs for personnel (salary + benefits), including the Executive Advisor, Project Director, Principals, and Teachers; local travel of central office staff to and from schools; student busing, and some professional development.

Principals participating in the MSAP will be trained and supported by the CPS Office of Strategy, Research, and Accountability to effectively use annual planning and budget processes towards sustainability. Known as the Continuous Improvement Work Plan (CIWP), the CIWP establishes a school's mission, strategic priorities for the next two years, and specific actions to be taken in order to accomplish goals on budget. The budget of each new magnet (like all CPS schools) will be funded through a combination of district, state, and federal sources.

***(3) Extent to which Professional Development is of Sufficient Quality, Intensity, and Duration to Lead to Improvements in Practice among the Recipients of those Services***

**Increasing High-Quality Professional Development of MSAP Educators:** The CPS MSAP Project will be grounded in a high-quality staff development plan that will develop teachers' academic content and pedagogical skills to both deliver rigorous academic content and develop students as creative thinkers and inquirers. Professional development will address the needs of teachers to increase knowledge and capacity regarding: (1) effective and diverse learning environments; (2) the principles and practices of the proposed STEM program ; (3) teaching and learning approaches which support high student achievement (inquiry-based, cooperative, and problem based learning); (4) best practices in the properly engaging families to recruit and expand the benefits of a STEM education; and (5) Social Emotional / Non-Cognitive Skills Development. Professional development will be intensive to ensure program rigor and

fidelity of implementation, comprising approximately 70-90 hours annually, including both formal workshops and frequent, job-embedded teacher collaboration.

A critical element of the professional development plan will be Professional Learning Communities (PLCs) established at each new STEM school. PLCs include both horizontal and vertical teams, which will meet regularly to review student work, improve teaching and learning, reinforce recently learned strategies. This research validated model (DuFour, 1998, 2002), provides a transformative opportunity for teachers to both receive and provide support, expanding instructional capacity by building knowledge and sharing resources. Each school will support a number of PLCs that focus on expanding practice through curriculum development, project-based / integrated instruction, and thorough data analysis.

Using the PLC model, teachers and MSAP specialists will develop a rigorous academic program of interdisciplinary instruction. Instructional units will use aspects of the curriculum design model defined by Wiggins and McTighe in *Understanding by Design* that align with the Teacher Framework being implemented to adhere to Common Core State Standards (CCSS) and Next Generation Science Standards (NGSS). In addition, teachers will receive expertise and support through CPS, Magnet Schools of America, and the MSAP Center (e.g., webinars, professional development sessions, teaching resources). A sample professional development plan follows below. The anticipated award notification date occurs after school begins. Staff development activities in the 2017-18 school-year will commence immediately upon award.

**Table 2: Sample Professional Development Plan**

| Provider | Topic | Attendees | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|---|---|---|---|
| **Administrators** | | | | | | | |
| National Institute of Magnet School Leaders | Creating exemplary magnet schools, innovative curriculum, sustainability | Leadership team | Feb-Mar | Aug-Jun | Aug. - Jun. | Aug-Jun | Aug. - Jun. |
| Discovery Education | STEMFormation PD series | Leadership team | Feb-Jun | Aug.-Jun | Aug-Jun | Aug.-Jun | Aug-Jun |
| McTighe and Associates | Schooling by Design | Leadership team | | Spring | Aug-June | | |
| University of Southern Florida | Technology Integration Matrix and Tools | School Administrators | Mar-Apr | Aug-Jun | | Spring | |
| Consultant | Forming and Strengthening PLCs, | Leadership, STEM specialists | | Aug-Jun | Aug-Jun | Aug-Jun | Aug-Jun |

| Provider | Topic | Attendees | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|---|---|---|---|
| | Analysis of Student Work | and select teachers | | | | | |
| Kagan Cooperative Learning Strategies | Cooperative Learning Strategies and Meetings | Leadership team | Mar-Jun | Jul-Dec | Jul-Dec | | |
| University of Illinois Chicago/Loyola University | Strengthening Instructional Practices in Math and Science | Leadership team | | Jul-Oct | | | |
| Engineering is Elementary | Integrating engineering into primary grades | Leadership team | Jun | Jul-Sept | | | |
| Social Emotional Learning | | Leadership team | | | | | |

| Provider | Topic | Attendees | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|---|---|---|---|
| **STEM Specialists** | | | | | | | |
| Creative Learning Systems | STEM Innovation Lab | STEM Specialists | | Sept-Nov | Spring | Spring | Spring |
| Kagan Cooperative Learning Strategies | Cooperative Meetings - Creating Dynamic Trainers | STEM Specialists | Mar-Jun | | | Jul-Dec | |
| University of Southern Florida | Technology Integration Matrix and Tools | STEM Specialists | Mar-Apr | Aug-Jun | | Spring | |
| New Teacher Center | Instructional Coaching Training | STEM Specialists | | Jul-Jun | Jul-Jun | Jul-Dec | |

| Provider | Topic | Attendees | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|---|---|---|---|
| **ALL School Personnel** | | | | | | | |
| Consultant | Cultural Competency Training | Administrators and ALL school personnel | May-Jul | Aug-Jun | Aug-Jun | Aug-Jun | Aug-Jun |
| Alternatives, Inc. and Channing Bete Co, Inc. | Social Emotional Learning | Administrators and school personnel | | | | | |
| **Teachers and other school personnel (e.g., counselors, social workers)** | | | | | | | |
| CPS Office of Teaching and Learning (Math/Science Departments) | Common Core and NGSS- connections between practices and integration with STEM | All K-5 and Math & Science 6-8 teachers | Jan-Jun | Aug-Jun | Aug-Jun | Aug-Jun | Aug-Jun |

| Provider | Topic | Attendees | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|---|---|---|---|
| University of Illinois Chicago/Loyola University | Strengthening Instructional Practices in Math and Science | All K-5 and Math & Science 6-8 teachers | | Aug-Jun | Aug-Jun | Aug-Jun | Aug-Jun |
| Discovery Education | STEMFormation PD series | All teachers | | Aug.-Jun | Aug-Jun | Aug.-Jun | Aug-Jun |
| Engineering is Elementary | Introduction to "Engineering is Elementary" | K-5 teachers | | Jun-Mar | | | |
| Chicago Teacher Center | Inquiry-based learning | All teachers | Jan,-June | Aug-Jun | Oct.-Jun | Aug- Jun | Oct - Jun |
| Kagan Learning | Cooperative Learning | All teachers | Spring | Jul.- Jun | Jul. - Jun | Jul.- Jun | Jul. - Jun |
| Consultant | Technology Integration | All teachers | | Sept-Jun | Aug-Jun | Aug-Jun | Aug-Jun |
| Project Syncere | Engineering Integration | All teachers | Summer | Aug- Jun | Aug- Jun | Aug- Jun | Aug- Jun |

| Provider | Topic | Attendees | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|---|---|---|---|
| Consultant | Use of PLCs to improve instruction and support to students | All teachers | | Aug-Jun | Aug-Jun | Aug-Jun | Aug-Jun |
| Consultants (Alternatives, INC and Channing Bete Co | Social Emotional Learning | All teachers | Late spring /Early summer | Aug-Jun | Aug-Jun | Aug-Jun | Aug-Jun |
| Vernier Probes | Use of Vernier Probes in instruction | Science teachers and STEM Specialists | | Aug-Jun | Sept-Dec | | |
| Illinois Math and Science Academy | Problem-Based Learning | All teachers | | | Aug-Jun | Aug-Jun | Aug-Jun |

| Provider | Topic | Attendees | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 |
|---|---|---|---|---|---|---|---|
| Polar Heart Rate Monitors | Use of heart rate monitors | PE teachers and STEM Specialists | | Jul-Jun | Sept-Dec | | |
| Social Emotional Learning | Talking and Peace circles and coaching | All teachers | May-Jun | Jul-Dec | Jul. - Jun | Jul-Jun | Jul-Jun |

**Table 2a: Professional Development Plan Frequency**

| | | | FREQUENCY | | | | |
|---|---|---|---|---|---|---|---|
| **Provider** | **Topic** | **Attendees** | **2017-2018** | **2018-2019** | **2019-2020** | **2020-2021** | **2021-2022** |
| **Training for Administrators** | | | | | | | |
| National Institute of Magnet School Leaders | Creating exemplary magnet schools, innovative curriculum, sustainability | Leadership team | 1 day | 2 days | 2 days | 1 day | Year-long process for cert. |
| Discovery Education | STEMFormation PD series | Leadership team | See Appendix 4 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| McTighe and Associates | Schooling by Design | Leadership team | | 2 days | 3 days | | |
| University of Southern Florida | Technology Integration Matrix and Tools | School Administrators | 2 days | quarterly coaching | | coaching once a semester | |
| Consultant | Forming and Strengthening PLCs Analysis of Student Work | TBD | | Aug-Jun | Aug-Jun | Aug-Jun | Aug-Jun |
| Kagan Cooperative Learning Strategies | Cooperative Learning Strategies and Meetings | Leadership team | 2 days | 1 day with quarterly coaching | quarterly coaching | | |
| University of Illinois Chicago/Loyola University | Strengthening Instructional Practices in Math and Science | Leadership team | | TBD | | | |
| Engineering is Elementary | Integrating engineering into primary grades | Leadership team | 2 days | 2 days | | | |
| Social Emotional Learning | | Leadership team | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **STEM Specialists** | | | | | | | |
| Creative Learning Systems | STEM Innovation Lab | STEM Specialists | | 4 days with ongoing technical support | 4 days | 4 days | 4 days |
| Kagan Cooperative Learning Strategies | Cooperative Meetings - Creating Dynamic Trainers | STEM Specialists | 3 days | | | quarterly coaching | |
| University of Southern Florida | Technology Integration Matrix and Tools | STEM Specialists | 2 days | quarterly coaching | | coaching once a semester | |
| New Teacher Center | Instructional Coaching Training | STEM Specialists | | 8 days throughout the year | 8 days throughout the year | 4 days of coaching | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **ALL School Personnel** | | | | | | | |
| Consultant | Cultural Competency Training | Administrators and ALL school personnel | TBD | TBD | TBD | TBD | TBD |
| Alternatives, Inc and Channing Bete Co, Inc | Social Emotional Learning | Teachers, administrators, and school support staff | 1 day | **2 days with quarterly coaching sessions** | **quarterly coaching sessions** | quarterly coaching sessions | **quarterly coaching sessions** |
| **Teachers and other school personnel (counselors, social workers, etc)** | | | | | | | |
| CPS Office of Teaching and Learning (Math/Science Departments) | Common Core and NGSS- connections between practices and integration with STEM | All K-5 and Math & Science 6-8 teachers | varies throughout the year | varies throughout the year | varies throughout the year | varies throughout the year | varies throughout the year |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| University of Illinois Chicago/Loyola University | Strengthening Instructional Practices in Math and Science | All K-5 and<br>Math &<br>Science 6-8<br>teachers | | TBD | TBD | TBD | TBD |
| Discovery Education | STEMFormation PD series | All teachers | See Appendix 4 | | | | |
| Engineering is Elementary | Introduction to "Engineering is Elementary" | K-5 teachers | | 2 days | | | |
| Chicago Teacher Center | Inquiry-based learning | All teachers | TBD | TBD | TBD | TBD | TBD |
| Kagan Learning | Cooperative Learning | All teachers | 2 days | 1 day with quarterly coaching | 1 day with quarterly coaching | 1 day with quarterly coaching | 1 day with quarterly coaching |
| Consultant | Technology Integration | All teachers | | TBD | TBD | TBD | TBD |
| Project Syncere | Engineering Integration | All teachers | TBD | TBD | TBD | TBD | TBD |
| Consultant | Use of PLCs to improve instruction and support to students | All teachers | | TBD | TBD | TBD | TBD |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Consultants (Alternatives, INC and Channing Bete Co | Social Emotional Learning | All teachers | 1 day | 2 days with quarterly coaching sessions | quarterly coaching sessions | quarterly coaching sessions | quarterly coaching sessions |
| Vernier Probes | Use of Vernier Probes in instruction | Science teachers and STEM Specialists | | 2 days | 2 coaching sessions | | |
| Illinois Math and Science Academy | Problem-Based Learning | All teachers | | | 3 days | 3 days | 3 days |
| Polar Heart Rate Monitors | Use of heart rate monitors | PE teachers and STEM Specialists | | 1 day | 1 day | | |

The district STEM team and evaluation team will monitor the transfer of knowledge of the professional development offered. Network staff and principals conduct frequent walk-throughs throughout the year to evaluate implementation of district and Network initiatives. The STEM team will create a walk through form that can be used to monitor such things as: a) the use of Kagan strategies during the class period, b) student use of technology during the lesson, c) does the lesson require collaboration among students, and d) do students work together toward a common goal as a few examples. The STEM team will also use the walk-through form during their visits to each school to monitor implementation practices of teachers. In all these scenarios multiple classrooms are visited which enables Network staff, principals and the STEM team to notice trends both positive and negative but to make adjustments as needed throughout the five year grant period. Under the guidance of the STEM team the evaluators will also determine the level of transference of practices learned during professional development into teachers' instructional methodology. Teachers will receive professional development throughout the grant period modifications can be made as needed. The STEM team will work with those organizations providing follow up coaching to ensure they also address the trends seen in their work with teachers. By providing professional development in a scaffolded manner, providing follow up coaching, monitoring implementation practices to determine trend and areas of need and making adjustments to the work in a timely manner we will provide teachers with the training and ongoing supports needed to transform the climate and culture of the schools, impact teacher practice in a positive way, and provide students with a strong STEM program that leads to success in high school and secondary education.

**NOTE:** All teachers includes STEM Specialists

The MSAP-supported STEM magnet schools will become part of a newly-developing K-12 pathway being established in CPS, parallel to the district's currently established International Baccalaureate (IB) pathway. CPS has worked extensively with corporate partners to broaden STEM offerings, leveraging their expertise and resources. As an example, Cisco, IBM, Microsoft Solutions, Motorola, and Verizon Wireless, have helped CPS transform five existing high schools into Early College STEM Schools - which offer the opportunity to graduate with industry certifications, college credit, and even an Associate's Degree. Both Mayor Emanuel and CPS CEO Forrest Claypool have committed to the STEM pathway as a centerpiece in the district's pledge to offer high quality educational choice options for families in every community across Chicago. Students need additional learning time and personalized attention to master today's curriculum – especially in STEM subjects. Accordingly, all students attending STEM schools receive quality curricula *and* are provided the time necessary to master content via the additional 150 minutes per week.

***(4)* Extent to which Project is supported by Strong Theory**

There is strong evidence supporting theory that magnet schools offer a better educational setting, partially due to student selection (i.e., parent choice through a lottery system) and due to the intrinsic benefits of increasing diversity (Goldring, E., and Smrekar, C., 2002).The CPS elementary STEM magnet school program relies on both to deliver increased academic achievement. Since parents are given a choice in where their student goes to school, they are empowered to take an increased role in their student's academic career, including volunteering at the school and following up on academics. Parental engagement will be widely dispersed (not just to those pre-dispositioned to being involved in their child's education) due to the intense nature of recruitment activities CPS provides. Additionally, research show that increased racial

and socioeconomic diversity leads to academic gains. (Zimmer, R., and Toma, E., 2000). Though districts are not allowed to use race as a factor for entrance (CPS was disallowed from using race in this way once the district's mandatory desegregation plan was lifted), other factors can be used to encourage diversity (such as socioeconomic status) and magnet schools can encourage diversity by actively recruiting a diverse pool of students to apply. It is the district's experience that the average magnet school experiences an increase in racial and socioeconomic diversity (Saporito, 2003).

Further, there is significant evidence that authentic STEM experiences provides significant benefits to students, and that faculty and administrators who implement instructional strategies that are proven (such as the ones CPS plans to use) have the largest positive impact on student academic achievement (Fairweather, 2008). Empirical research further underpins the specific model of STEM-integrated education that CPS seeks to introduce. The largest positive effects have been found when full-STEM (instead of a subset of the disciplines) integration occurs in elementary grades (Becker, and Park, 2011).Through the rigorous involvement of problem-solving, experiential learning, teamwork, collaboration, and delving into current applications of STEM thinking and knowledge (including experiences with STEM experts), students will be well-positioned to increase their academic achievement, as well as position themselves for increased success in college and career (in which these skills are becoming more and more vital). Through proven professional development, CPS is confident that teachers will have the ability to teach and use authentic STEM experiences that are relevant, meaningful, and academically rigorous.

CPS seeks to implement a variety of research proven tactics to increase minority-student achievement in STEM, including presenting all students with the opportunity to take challenging,

college-preparatory courses (such as AP courses); building a marketing and outreach programs with a demonstrated effectiveness to reach a diverse and underserved pool of applicants; focusing on peer collaboration and research experiences; making the STEM curricula relevant to students (e.g., connections to current events, surrounding communities, and student interests); and exposing students to different types of STEM careers and STEM professionals. (Museus, S. D., Palmer, R. T., Davis, R. J., & Maramba, D., 2011).

**QUALITY OF THE MANAGEMENT PLAN**

**(1) Adequacy of Management Plan to Achieve Objectives on Time and Within Budget, including Clearly Defined Responsibilities, Timelines, and Milestones**

CPS has assembled a highly qualified team with significant experience in education (both in teaching and administrative roles), curriculum development, desegregation strategies, and the STEM and IB themes to successfully design and create the new magnet schools. The project will be managed through the district's Magnet, Gifted, AP and IB Department, which oversees a variety of choice programs including gifted, Advanced Placement, IB, and over 120 magnet and magnet cluster programs. The department is part of the Office of Teaching and Learning, which provides schools support for the effective delivery of the Common Core State Standards and is responsible for curriculum, instruction, professional learning for teachers, and positive behavioral programs for students.

**District Office Team:** The project will be led by Dr. Michelle Frazier, who will serve as Project Director, devoting 50% time to daily implementation. Dr. Frazier has 30 years of education experience as both a teacher and administrator and served as the Project Director on the district's two prior successful MSAP grants. Dr. Frazier will track progress toward goals and objectives; manage expenditures of MSAP funds; support school-based teams in the design,

implementation, and evaluation of the new curricula; coordinate with other district office departments; and monitor implementation at school sites, among other responsibilities.

Dr. Frazier will be supported by two full-time, grant-funded positions who will report to her. A full-time STEM Project Manager will assist in curriculum development, program implementation, staff training, and student recruitment. A Project Coordinator will provide administrative support for all project activities. CPS will recruit for these positions from both within and outside of CPS, seeking those candidates that best have the skill sets described in the job descriptions (Appendix). In addition to MSAP-funded positions, the Project Director will be supported by an outside agency to provide expertise in marketing and public relations. The agency will collaborate with the STEM Project Manager, Project Coordinator, and school leadership teams to ensure an effective marketing campaign in each school's surrounding communities. They will be responsible for developing items such as program materials, public service announcements, recruitment videos, newsletters, and slide presentations based on stakeholder input to ensure the public is aware of the new schools. An Executive Advisor (LaTanya McDade, 5% FTE, CPS Chief of the Office of Teaching and Learning) and Advisor (Rukiya Curvey Johnson, 15% FTE, Executive Director of STEM Initiatives) will provide additional leadership and guidance on the project as appropriate.

The Project Director will hire and oversee grant-funded STEM Integration Specialists. CPS will recruit both within and outside of CPS, seeking candidates with the best combination of skills and experience as outlined in the job descriptions (in the appendix). In making these positions grant-funded, CPS does not have to eliminate any positions from the schools (e.g., selecting a teacher or staff member to oversee the implementation of the STEM magnet

program), and when the grant period is over, CPS has traditionally maintained these positions in the schools.

**School-based Teams:** Principals will be responsible for the operation of the new magnet programs on site and will supervise all school staff. The Principal will ensure the day-to-day responsibilities for the operation of the program identified in the grant and by the Program Director are performed by the identified theme-related Specialists, (STEM Integration Specialists and Technology Integration Specialists), who will assist with site management. The Principals and Specialists, with input from the Project Director, will be responsible for overall program implementation, including curriculum and program development, and staff development and evaluation.

By the end of the project, the Specialists will facilitate production of a Curriculum Guide for each school which contains units from each grade level that integrate the STEM theme throughout all subject areas, are aligned with the Common Core State Standards and the Next Generation Science Standards. They will contain information on grade-specific curriculum activities for all teachers. Curriculum Guides in combination which outline the efficacy of research-based programs and innovative instructional practices will lead to improved academic achievement.

The following timeline lists management activities critical to implementing the grant, timeline, and staff responsible.

**Table 3. Key Management Tasks**

| Activity | Responsible | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|
| 1. Appoint MSAP staff & school positions | Project Director (PD) and Principals | Oct-Nov | | | | |
| 2. Orientation/Training of all Magnet staff | PD, Principals, Specialists | Jan-Mar. | | | | |
| 3. Develop Recruitment Activities | PD, PS, Prin., & Specialists | Feb-Mar | Jul-Aug | Jul-Aug | Jul-Aug | Jul-Aug |
| 4. Recruit students | PD, CRS, PS, Prin., and Specialists | Feb-May | Oct - Feb | Oct - Feb | Oct - Feb | Oct - Feb |
| Run lottery | OAE | Run in May | Feb, notified in March | Feb, notified in March | Feb, notified in March | Feb, notified in March |
| Student Assignments | PD, Specialists, Prin. | April-June | Jan – April | Jan – April | Jan – April | Jan – April |
| Develop Curriculum | CRS, Specialists, Teachers | Jan-June | July - June | July - June | July - June | July - June |

| | | | | | | |
|---|---|---|---|---|---|---|
| Monitor Project | PD, Prin., Specialists, Evaluator | Jan-June | July – June | June – June | July – June | June – June |
| Select & Order Equipment & Supplies | PD, Prin. Specialists | Jan-June | July-Dec | July-Dec | July-Dec | July-Dec |
| Collect Data for Evaluation | PD, Prin., Specialists | Sept-- May | Sept-- May | Sept-- May | Sept-- May | Sept-- May |
| Develop & Initiate PR Campaign | PD, CPS Prin. | Nov-June | July-June | July-June | July-June | July-June |
| Plan & Offer Summer Programs | PD, Prin., Specialists | Jan - July | Jan - July | Jan - July | Jan - July | Jan - July |
| Prepare Annual Evaluation | PD, Evaluator | Feb – June | Feb – June | Feb – June | Feb – June | Final Report |

**Continuous Improvement Plan:** The CPS MSAP Project will employ a continuous improvement plan through which all stakeholders will be consistently updated with actionable information to monitor implementation and make mid-course corrections as necessary. Regular meetings and check-ins during which data is reviewed and implementation issues are discussed will be critical to the success of the project, and sharing of best practices across schools.

Dr. Frazier will meet bi-weekly with the Director, Magnet, Gifted, and IB Programs who is also a member of the district instructional cabinet, and will serve as an Advisor to this project.

Dr. Frazier will also provide regular updates and quarterly reports to the Chief of Teaching and Learning, who will serve as Executive Advisor, regarding progress towards grant goals and objectives. Ms. Frazier will also meet with the Executive Director of STEM Initiatives, who represents another advisor for the program. Quarterly meetings with the Office of Budget and Grants Management will ensure that grant funds are spent according to budget in a timely manner.

The Project Director and/or STEM Project Manager will meet formally at least twice a month with the Program / Content Specialists from each magnet school as a group to share effective strategies, monitor progress toward grant goals, and plan staff development opportunities. Dr. Frazier will also meet regularly with the Principals to coordinate program policies, review data, discuss site observations, and problem solve. Principals will also receive training and other support through the district's comprehensive Principal Quality Strategy. This strategy includes training for new, mid-career, and veteran principals in areas such as leadership skills, use of data, financial management, and parental engagement, the development of PLCs within each regional Network of schools; and implementing an evaluation system that measures student growth tied to national benchmarks and principal performance. These resources will further support principal quality and leadership at new magnet schools.

Each new program will be supported by a school-based Magnet Leadership Implementation Team comprised of the Principal, Specialists, teachers, parents, counselors, and educational support staff. The team will work collaboratively to support and monitor site-based implementation, including promoting activities with parents, data sharing, and soliciting feedback.

**Effectiveness of Plan to Attain Outcomes that Accomplish Program Purposes:**

Through experience implementing successful magnet schools, anticipated outcomes (aligned with and will accomplish the purposes of the U.S. Magnet Schools Assistance Program) include: (1) reduced minority group isolation/greater racial integration at participating schools, (2) increased academic achievement of participating students, (3) provision of high quality educational choice options to students in low-performing schools, and (4) the establishment of long-term sustainable magnet programs. These project goals and objectives align with the annual performance metrics (a), (b), and (c) in the NIA and application instructions; and long term performance measures (d), and (e) will be reported using internal district teams. Project goals and objectives are as follows:

**Goal 1: Desegregation and Choice (Annual Performance Measure a).**

Objective 1: To eliminate, reduce or prevent minority group isolation in the targeted schools without negatively impacting feeder schools.

**Goal 2: Building Capacity.**

Objective 2: To design and develop innovative educational methods and practices that promote diversity, increase choice and ensure students gain 21st century skills.

Objective 3: To provide professional development for magnet school teachers related to implementing high-quality educational programs, increasing achievement for all students, improving instructional practices, and ensuring program sustainability.

Objective 4: To ensure parents and community members are actively involved in project planning, implementation, and decision-making.

**Goal 3: Academic Achievement (Annual Performance Measures b and c).**

Objective 5: To increase percentages of all magnet students, including those from major racial and ethnic subgroups, who meet State proficiency targets in reading/language arts and mathematics.

**Goal 4 and Goal 5: Long Term Sustainability (Long Term Performance Measure d and e).**

Objective 6: The percentage of magnet schools that are still operating as magnet schools three years after the performance period ends.

Objective 7: The percentage of magnet schools that received assistance that meet the state's annual measurable objectives, and, for high schools graduation rate targets at least three years after funding ends.

**Outcomes are Attainable within the Project Period (or as mandated within long term goals):** As learned through previous experience implementing the 38 existing magnet schools in the district, accomplishment thing above goals and objective will ensure sustainable magnet school programs. CPS MSAP project personnel will achieve project goals and objectives aligned with MSAP purposes and Annual Performance Measures (APM), in addition to local measures, through implementation of the three-year timelines below, which list major grant activities, timeframe, and staff responsible.

**Table 4: Goals, Activities, Outcomes, and Milestones**

| **Goal 1: Desegregation and Choice (Annual Performance Measure a)** | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Key** | **Year 1** | | | | **Year 2** | | | | **Year 3** | | | | **Year 4** | | | | **Year 5** | | | | **Responsible** |
| Activities | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | Individuals |
| Contract with PR firm | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | Project Director |
| Hold info sessions | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | PD, CRS |
| Advertise in local papers, on radio, public transit billboards | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | CRS, PS, Principals |
| Work w/ community-based orgs to publicize new schools | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | PD, Principals, CRS |

| **Goals 2 and 3: Building Capacity and Academic Achievement (Annual Performance Measures b, and c)** | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Key** | **Year 1** | | | | **Year 2** | | | | **Year 3** | | | | **Year 4** | | | | **Year 5** | | | | **Responsible** |
| Activities | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | Individuals |
| Hire Program and Content Specialists | | X | X | X | | | | | | | | | | | | | | | | | PD, Principals |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Implement PD Plan | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | PD, CRS, PS |
| Track PD attendance | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | CRS, PS |
| PLCs meet | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | Principals, PS |
| Develop curriculum | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | PD, Principals, CRS, PS, CS |
| Implement full new curricula | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | Principals, PS, CS |
| Produce curriculum guide | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | Program Specialist |
| Implement parent engagement strategies | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | Principals, PS, CS, Teachers |
| Connect schools with appropriate partners | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | EA, A, PD, Principals |
| Advertise in local papers, on radio, public transit billboards | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | PD, Principals, CRS |
| Work w/ community-based orgs to publicize new schools | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | PD, Principals, CRS |

Three proposed magnet schools will begin operation in the 2017-18 school year. The STEM programs will be phased in over the course of the grant with full implementation for currently operating schools completed by June 30, 2022. Through the district's previous design and current operation of magnet schools that have successfully reduced minority group isolation and increased academic achievement, CPS has demonstrated its ability to achieve the purposes of the MSAP program.

**Objectives are Measurable and Quantifiable:** All project objectives are clear, measurable, and quantifiable and will provide a basis for both formative and summative evaluation of the project. Goals and objectives are based on analysis of census tracts and community data near school sites, parent demand data for such programs, and past experience to be attainable within the grant period. Annual benchmarks or performance targets for each objective are detailed in a chart later in this section. Objectives are based on overall purposes of MSAP (grouped into the three major categories) and include the relevant annual performance measures described in the NIA and application instruction. Our overall goals are: 1) Desegregation and Choice (Objective 1, annual performance measure a), Building Capacity (Objectives 2-4), and Academic Achievement (Objective 5, annual performance measures b and c). As an internal performance measure, i.e. cost-related measure, CPS will report that separately with assistance from the district's internal budget team. The district will *also* report on long-term measures mandated within the GRPA three years *after* the conclusion of the funding period (Objectives 6 and 7).

**Goal 1/Objective 1/Annual Performance Measure A:** CPS MSAP project planners anticipate a reduction of minority group isolation at participating schools by 14% by the conclusion of the grant. It is also highly predicted, based on experience, that participating

schools will continue to diversify well beyond the grant period. Projections are based on an analysis of each school's ability to attract students of different racial backgrounds to the school within the project period. This is determined through analysis of U.S. Census data, City of Chicago community area data, and enrollment of public and private school students by race, in addition to prior experience implementing similar magnet programs.

Based on information gathered through analysis, each site is projected to have an applicant pool sufficient to reduce minority group isolation without negatively impacting the feeder schools, particularly given the surrounding areas' population of private and parochial students who historically have been enticed to attend a high-performing magnet school. This will be measured by official enrollment data at each target school as tracked through the district's student information system. In addition, CPS will monitor enrollment to ensure there is no negative impact on district-run feeder schools (See Table 4 in Appendix), though some private and parochial schools may be impacted. Schools were selected based on their proximity to neighborhoods where diverse groups of students live and would likely be willing to attend a STEM magnet school in the selected location. As CPS prepares to embark on the public relations and recruitment campaign, project planners will further analyze each school's applicant pool data to ensure all efforts are made to attract students from diverse backgrounds, including private school students, to these new programs.

The table below summarizes the capacity for each target school and illustrates its ability to serve the existing population in the new magnet program as well as to attract significant numbers of new magnet students.

**Table 5: Project End of Grant Enrollment**

| School | 2016-17 Enrollment | New Magnet Seats | |
|---|---|---|---|
| Brown | 255 | 270 | 525 |
| Claremont | 402 | 327 | 729 |
| Jungman | 265 | 160 | 425 |
| Total | 922 | 757 | 1,679 |

While each school will significantly diversify during and beyond the grant period, even as the total population changes with new students attracted by the magnet programs, schools will continue to serve a significant proportion of students from minority families. It is, therefore, imperative that the program employ innovative themes, educational methods, and practices that promote diversity and increase choices for parents and students.

**Goal 2/Objectives 2.1-2.5/Annual Performance Measures B and C:** By the end of the grant period, increased academic achievement will be evidenced and measured by an: (1) increase in the percentages of students in major racial and ethnic groups scoring proficient or above in reading/language arts and mathematics on the state standardized assessment at participating schools by 14%; and (2) decrease in achievement gaps between white students and black and Latino students in reading/language arts and mathematics on the state standardized assessment by 10% in participating schools. Objectives that will contribute to increased student

achievement as measured by the exams include: (1) building capacity of faculty and educational support staff to help students meet the Common Core and Next Generation Science Standards, (2) significantly improving parent engagement 40%, and (3) promoting STEM to traditionally underrepresented groups. These objectives will be measured through survey data, site observations, and attendance at professional development. Site visits by external evaluator American Institute for Research (AIR), Project Director, and other program-based experts will verify that the Engineering Program is in place and operating effectively.

Employing innovative, research-based instructional strategies that have been shown to meet the needs and interests of the diverse populations to be served by the magnet programs will substantially strengthen the knowledge of academic subjects and the attainment of tangible and marketable vocational, technological, and higher order thinking skills that are required to support all participating students in meeting the Common Core State Standards and Next Generation Science Standards and succeed after high school graduation. Students completing the proposed magnet programs will: (1) improve achievement in reading and math, as well as other core content areas; (2) be better able to express themselves in writing; (3) achieve at comparable rates for both minority and non-minority students, and (4) express interest in pursuing STEM in college and careers.

The new magnet schools will ensure all students have equitable access to a high quality education that will enable students to succeed academically. In addition to test data, this will be measured through teacher survey data that will verify that: (1) diverse groups of students participate in all activities and classrooms, (2) strategies, such as Cooperative Learning, are being implemented to encourage all students to meaningfully interact; and (3) abundant opportunities exist for students from different races to work and play together. These innovative

instructional strategies and curricula coupled with additional academic support for struggling students will aid students in reaching achievement goals set by the state and district while decreasing achievement gaps for subgroups of students in each school.

**Outcomes can be Used to Determine Progress in Meeting Intended Outcomes:** The Magnet School Assistance Program requires objectives for each year of the three-year project period. To determine whether CPS is making adequate progress toward attaining objectives, interim goals or benchmarks for each year are projected below. These are transitional objectives used to gauge progress and provide an opportunity for project leadership to refine processes as needed. The annual benchmarks for each year of the grant are:

**Objective 1: To eliminate, reduce or prevent minority group isolation in the targeted schools without negatively impacting feeder schools.**

Measure 1.1: Minority Group Isolation of African American students at Brown will decrease, from the baseline (91%) established on October 1, 2016, by:

- At least 1 percentage point by September 30, 2018
- At least 3 percentage points by September 30, 2019
- At least 3 percentage points by September 30, 2020
- At least 3 percentage points by September 30, 2021
- At least 4 percentage points by September 30, 2022

Measure 1.2: Minority Group Isolation of African American students at Claremont will decrease, from the baseline (83%) established on October 1, 2016, by:

- At least 1 percentage point by September 30, 2018
- At least 3 percentage points by September 30, 2019

- At least 3 percentage points by September 30, 2020
- At least 3 percentage points by September 30, 2021
- At least 4 percentage points by September 30, 2022

Measure 1.3: Minority Group Isolation of Latino students at Jungman will decrease, from the baseline (87%) established on October 1, 2016, by:

- At least 1 percentage point by September 30, 2018
- At least 3 percentage points by September 30, 2019
- At least 3 percentage points by September 30, 2020
- At least 3 percentage points by September 30, 2021
- At least 4 percentage points by September 30, 2022

Measure 1.4: The number of applications received for each magnet school will increase:

- At least 40 by September 30, 2018
- At least 50 by September 30, 2019
- At least 60 by September 30, 2020
- At least 70 by September 30, 2021
- At least 80 by September 30, 2022

Measure 1.5: During the first year of implementation, each funded school will develop (and, thereafter, annually update) a plan for ensuring that regular education classrooms and before- and after-school programs are reflective of the racial, gender, and socioeconomic diversity of the school population.

- 3 schools by September 30, 2018
- 3 schools by September 30, 2019
- 3 schools by September 30, 2020

- 3 schools by September 30, 2021
- 3 schools by September 30, 2022

Measure 1.6: Magnet school enrollees will not change enrollment percentages of major racial and ethnic subgroups at any CPS MSAP feeder school by more than ± 2 percentage points by October 1, 2018, 2019, 2020, 2021, 2022.

**Objective 2: To design and develop innovative educational methods and practices that promote diversity, increase choice and ensure students gain 21st century skills.**

Measure 2.1: The percentage of magnet teachers at MSAP-funded sites who agree with the following statements: 1) my instruction includes innovative, challenging instructional materials, 2) magnet content promotes diversity and choice; 3) I use strategies that encourage students from different racial, ethnic, and socio-economic groups to interact; 4) my magnet school provides students with a resource-rich, interactive learning environment; and 5) our magnet curriculum promotes the development of 21st century skills will be:

- 50 percent by September 30, 2018
- 75 percent by September 30, 2019
- 90 percent by September 30, 2020
- 92.5 percent by September 30, 2021
- 95 percent by September 30, 2022

Measure 2.2: The percentage of magnet teachers at MSAP-funded sites indicating consistent use of three (3) or more MSAP site-based identified "best practices" will increase to:

- 50 percent by September 30, 2018
- 65 percent by September 30, 2019

- 85 percent by September 30, 2020
- 87.5 percent by September 30, 2021
- 90 percent by September 30, 2022

Measure 2.3: The percentage of students at the MSAP-funded sites who agree with the following statements: *In my classroom(s), 1) students work together in groups, 2) I have worked with most of the students in my classroom (core classes), 3) my teacher(s) allows me to demonstrate my learning through projects and/or class presentations, 4) I feel my teacher(s) care about me and about my fellow classmates, and 5) I am developing 21st century skills* will increase to:

- N/A September 30, 2018
- 65 percent by September 30, 2019
- 85 percent by September 30, 2020
- 87.7 percent by September 30, 2021
- 90 percent by September 30, 2021

Measure 2.4: The percentage of classroom observation rubrics showing evidence of the following: *(1) classrooms that provide a resource-rich, interactive learning environment and (2) that are equipped with computers and other technology; (3) teachers using MSAP identified research-based "best practices" and strategies, (4) instruction that promotes diversity and encourages students from different racial, ethnic, and socio-economic groups to interact; and (5) students who are demonstrating 21st century skills* will increase to:

- N/A September 30, 2018
- 50 percent of the observations will meet all five criteria by September 30, 2019
- 75 percent of the observations will meet all five criteria by September 30, 2020

- 87.5 percent of the observations will meet all five criteria by September 30, 2021
- 90 percent of the observations will meet all five criteria by September 30, 2021

**Objective 3: To provide professional development for magnet school teachers related to implementing high-quality educational programs, increasing achievement for all students, improving instructional practices, and ensuring program sustainability.**

Measure 3.1: The percentage of magnet teachers at MSAP-funded sites who indicate that project staff development activities: *1) increase their content knowledge, 2) improve their instructional skills, 3) increase innovative practices, and 4) will help sustain the magnet program* will increase to:

- 50 percent by September 30, 2018
- 75 percent by September 30, 2019
- 90 percent by September 30, 2020
- 92.5 percent by September 30, 2021
- 95 percent by September 30, 2022

Measure 3.2: The percentage of magnet teachers at the funded sites who agree with the following statements: *1) I participate in Professional Learning Communities (PLC), 2) PLCs meet regularly, 3) PLC team members reinforce strategies learned in staff development, 4) PLC team members collaborate, 5) PLC teams develop theme-related curriculum units, and 6) the work of my PLC supports magnet sustainability* will increase to:

- 50 percent by September 30, 2018
- 75 percent by September 30, 2019
- 90 percent by September 30, 2020
- 92.5 percent by September 30, 2021

- 95 percent by September 30, 2022

Measure 3.3: The percentage of classroom observation rubrics showing evidence of the following: *(1) challenging instructional materials; (2) magnet units/curriculum aligned with State Assessment Proficiency Standards; and (3) (when technology is used in a lesson) measures of technology integration on the SAMR Model at the augmentation level or higher* will increase :

- N/A September 30, 2018
- 50 percent of the observations will meet all three criteria by September 30, 2019
- 75 percent of the observations will meet all three criteria by September 30, 2020
- 80 percent of the observations will meet all three criteria by September 30, 2021
- 85 percent of the observations will meet all three criteria by September 30, 2022

Measure 3.4: The percentage of magnet classroom teachers at each MSAP-funded school who participate in a minimum of 70 hours annually of MSAP-related training and/or coaching will increase to (**Note** - includes full-time classroom and theme-related specials teachers who worked at the site the entire school year):

- 50 percent by September 30, 2018
- 75 percent by September 30, 2019
- 90 percent by September 30, 2020
- 92.5 percent by September 30, 2021
- 95 percent by September 30, 2022

Measure 3.5: Annually, scheduled MSAP-funded professional development will provide a minimum of 10 hours of training in each of the following five areas: magnet theme strands, magnet-identified "best practices," core content instructional programs, cultural competency, and using technology for instruction.

- All schools by September 30, 2018
- All schools by September 30, 2019
- All schools by September 30, 2020
- All schools by September 30, 2021
- All schools by September 30, 2022

Measure 3.6: The percentage of the MSAP funded schools' whose administrative team members participate in a minimum of 50 hours annually of MSAP-related training will increase to: / Note – to include principals, assistant principal, guidance counselor, magnet coordinator, content area coaches, and any MSAP-funded non-instructional personnel.

- 45 percent by September 30, 2018
- 65 percent by September 30, 2019
- 75 percent by September 30, 2020
- 80 percent by September 30, 2021
- 85 percent by September 30, 2022

Measure 3.7: The percentage of each MSAP-funded school's magnet classroom teachers submitting an annual paper or electronic form describing how they used technology for instruction at the augmentation level or above on the SAMR Model will increase to:

- N/A September 30, 2018
- 50 percent by September 30, 2019
- 60 percent by September 30, 2020
- 67.5 percent by September 30, 2021
- 75 percent by September 30, 2022

**Objective 4: To ensure parents and community members are actively involved in project planning, implementation, and decision-making.**

Measure 4.1: The percentage of parents who indicate that the magnet program provides opportunities to: 1) participate in magnet planning, 2) have an active role in magnet implementation, and 3) provide input into school decision-making will increase to:

- N/A September 30, 2018
- 65 percent by September 30, 2019
- 80 percent by September 30, 2020
- 85 percent by September 30, 2021
- 90 percent by September 30, 2022

Measure 4.2: The number of parents attending theme-related parent events will increase:

- N/A Sept. 30, 2018
- Establish baseline by Sept. 30, 2019
- 20% increase from baseline by Sept. 30, 2020
- 30% increase from baseline by Sept. 30, 2021
- 40% increase from baseline by Sept. 30, 2022

Measure 4.3: The number of parents responding to electronic or paper requests for input regarding magnet planning or implementation ideas will increase to:

- N/A September 30, 2018
- Establish baseline by September 30, 2019
- 20% by September 30, 2020
- 30% by September 30, 2021

- 40% by September 30, 2022

Measure 4.4: The percentage of parents who think that community partners 1) are active in the design and implementation of the magnet program and 2) they help the school ensure relevance and extend learning into the 21st century will increase to:

- N/A September 30, 2018
- 65 percent by September 30, 2019
- 80 percent by September 30, 2020
- 85 percent by September 30, 2021
- 90 percent by September 30, 2022

Measure 4.5: The percentage of parents participating in focus groups who think that parents and magnet community partners are given opportunities to be active in magnet planning, implementation, and decision-making will increase to:

- N/A September 30, 2018
- 50 percent by September 30, 2019
- 75 percent by September 30, 2020
- 82.5 percent by September 30, 2021
- 90 percent by September 30, 2022

Measure 4.6: Beginning in project year 2 (2018-2019), the magnet theme and instructional model will be incorporated into each MSAP-funded school's School Improvement Plan.

- N/A September 30, 2018
- All 3 by September 30, 2019
- All 3 by September 30, 2020

- All 3 by September 30, 2021
- All 3 by September 30, 2022

**Objective 5: To increase percentages of all magnet students, including those from major racial and ethnic subgroups, who meet State proficiency targets in reading/language arts and mathematics.**

Measure 5.1: Proficiency rates for major racial and ethnic groups on Illinois' reading/ language arts state assessment will increase over the baseline established in 2017 by:

- 1 percentage point by September 30, 2018
- 3 percentage points by September 30, 2019
- 3 percentage points by September 30, 2020
- 3 percentage points by September 30, 2021
- 4 percentage points by September 30, 2022

Measure 5.2: Proficiency rates for major racial and ethnic groups on Illinois' mathematics state assessment will increase over the baseline established in 2017 by:

- 1 percentage point by September 30, 2018
- 3 percentage points by September 30, 2019
- 3 percentage points by September 30, 2020
- 3 percentage points by September 30, 2021
- 4 percentage points by September 30, 2022

**Objective 6: The percentage of magnet schools that are still operating as magnet schools three years *after* the performance period ends.**

Measure 6.1: Percentage of magnet schools still in operation as established by 2017 baseline:

- Percentage of magnet schools in operation as of September 30, 2025

**Objective 7: The percentage of magnet schools that received assistance that meet the state's annual measurable objectives, at least three years after funding ends.**

Measure 7.1: Percentage of magnet schools still in operation meeting state annual measurable objectives as established by 2017 baseline:

- Percentage of magnet schools in meeting state mandated objectives as of September 30, 2025

**Tables 6: Complete List of Objectives and Outcomes**

| Objective | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 |
|---|---|---|---|---|---|
| **1.1** | MGI down 1% | MGI down 3% | MGI down 3% | MGI down 3% | MGI down 4% (14 cumulative) |
| **1.2** | MGI down 1% | MGI down 3% | MGI down 3% | MGI down 3% | MGI down 4% (14 cumulative) |
| **1.3** | MGI down 1% | MGI down 3% | MGI down 3% | MGI down 3% | MGI down 4% (14 cumulative) |
| **1.5** | # Applications Received | # Applications Received | # Applications Received | # Applications Received | # Applications Received |

| | | | | | |
|---|---|---|---|---|---|
| **1.6** | All operating schools develop and update plan for all classrooms and programs reflecting school diversity | All operating schools develop and update plan for all classrooms and programs reflecting school diversity | All operating schools develop and update plan for all classrooms and programs reflecting school diversity | All operating schools develop and update plan for all classrooms and programs reflecting school diversity | All operating schools develop and update plan for all classrooms and programs reflecting school diversity |
| **1.7** | No CPS feeder school racial/ethnic subgroups will change diversity due to MSAP by more than 2% | No CPS feeder school racial/ethnic subgroups will change diversity due to MSAP by more than 2% | No CPS feeder school racial/ethnic subgroups will change diversity due to MSAP by more than 2% | No CPS feeder school racial/ethnic subgroups will change diversity due to MSAP by more than 2% | No CPS feeder school racial/ethnic subgroups will change diversity due to MSAP by more than 2% |

| | | | | | |
|---|---|---|---|---|---|
| **2.1** | 50% teachers agree with questions about MSAP implementation quality | 75% teachers agree with questions about MSAP implementation quality | 90% teachers agree with questions about MSAP implementation quality | 92.5% teachers agree with questions about MSAP implementation quality | 95% teachers agree with questions about MSAP implementation quality |
| **2.2** | 50% teachers indicating consistent use of 3 or more best practices | 65% teachers indicating consistent use of 3 or more best practices | 85% teachers indicating consistent use of 3 or more best practices | 87.5% teachers indicating consistent use of 3 or more best practices | 90% teachers indicating consistent use of 3 or more best practices |
| **2.3** | N/A | 65% students agree with questions about MSAP implementation quality | 85% students agree with questions about MSAP implementation quality | 87.5% students agree with questions about MSAP implementation quality | 90% students agree with questions about MSAP implementation quality |

| | | | | | |
|---|---|---|---|---|---|
| **2.4** | N/A | 65% of classroom observations meet all 5 quality criteria | 85% of classroom observations meet all 5 quality criteria | 87.5% of classroom observations meet all 5 quality criteria | 90% of classroom observations meet all 5 quality criteria |
| **3.1** | 50% teachers agree with questions about positive staff development | 75% teachers agree with questions about positive staff development | 90% teachers agree with questions about positive staff development | 92.5% teachers agree with questions about positive staff development | 95% teachers agree with questions about positive staff development |
| **3.2** | 50% teachers agree with questions about usefulness of PLC | 75% teachers agree with questions about usefulness of PLC | 90% teachers agree with questions about usefulness of PLC | 92.5% teachers agree with questions about usefulness of PLC | 95% teachers agree with questions about usefulness of PLC |

| | | | | | |
|---|---|---|---|---|---|
| **3.3** | N/A | 50% of classroom observations show increased rigor | 75% of classroom observations show increased rigor | 80% of classroom observations show increased rigor | 85% of classroom observations show increased rigor |
| **3.4** | 50% of teachers participate in minimum 70 hours PD | 75% of teachers participate in minimum 70 hours PD | 90% of teachers participate in minimum 70 hours PD | 92.5% of teachers participate in minimum 70 hours PD | 95% of teachers participate in minimum 70 hours PD |
| **3.5** | 10 hours of grant-funded PD at each school | 10 hours of grant-funded PD at each school | 10 hours of grant-funded PD at each school | 10 hours of grant-funded PD at each school | 10 hours of grant-funded PD at each school |

| | | | | | |
|---|---|---|---|---|---|
| **3.6** | 45% of school's administration team participate in minimum 50 hours PD | 65% of school's administration team participate in minimum 50 hours PD | 75% of school's administration team participate in minimum 70 hours PD | 80% of school's administration team participate in minimum 70 hours PD | 85% of school's administration team participate in minimum 70 hours PD |
| **3.7** | N/A | 50% of each school's teachers submit form describing use of technology in classroom at or above augmentation on SAMR Model | 60% of each school's teachers submit form describing use of technology in classroom at or above augmentation on SAMR Model | 67.5% of each school's teachers submit form describing use of technology in classroom at or above augmentation on SAMR Model | 75% of each school's teachers submit form describing use of technology in classroom at or above augmentation on SAMR Model |

| | | | | | |
|---|---|---|---|---|---|
| **4.1** | N/A | 65% parents agree with questions about magnet opportunities for student | 80% parents agree with questions about magnet opportunities for student | 85% parents agree with questions about magnet opportunities for student | 90% parents agree with questions about magnet opportunities for student |
| **4.2** | N/A | Establish parent attendance at school events baseline | 20% increase from baseline of parents attending school events | 30% increase from baseline of parents attending school events | 40% increase from baseline of parents attending school events |
| **4.3** | N/A | Establish parent responding to requests for input baseline | 20% increase from baseline of parents responding to requests for input | 30% increase from baseline of parents responding to requests for input | 40% increase from baseline of parents responding to requests for input |

| | | | | | |
|---|---|---|---|---|---|
| **4.4** | N/A | 65% parents agree with questions about community involvement in magnet | 80% parents agree with questions about community involvement in magnet | 85% parents agree with questions about community involvement in magnet | 90% parents agree with questions about community involvement in magnet |
| **4.5** | N/A | 50% parents in focus groups agree with questions about community involvement in magnet | 75% parents in focus groups agree with questions about community involvement in magnet | 82.5% parents in focus groups agree with questions about community involvement in magnet | 90% parents in focus groups agree with questions about community involvement in magnet |

| | | | | | |
|---|---|---|---|---|---|
| **4.6** | N/A | All schools have STEM and magnet incorporated into CIWP | All schools have STEM and magnet incorporated into CIWP | All schools have STEM and magnet incorporated into CIWP | All schools have STEM and magnet incorporated into CIWP |
| **5.1** | 1% increase over baseline on Illinois reading assessment | 3% increase over baseline on Illinois reading assessment | 3% increase over baseline on Illinois reading assessment | 3% increase over baseline on Illinois reading assessment | 4% increase over baseline on Illinois reading assessment (14% Cumulative) |
| **5.2** | 1% increase over baseline on Illinois reading assessment | 3% increase over baseline on Illinois reading assessment | 3% increase over baseline on Illinois reading assessment | 3% increase over baseline on Illinois reading assessment | 4% increase over baseline on Illinois reading assessment (14% Cumulative) |

Long term goals will be determined three years after the conclusion of the grant period based upon stated benchmarks. Monitoring interim outcome measures associated with each objective will help project leaders determine whether the project is on track to reach its goals and make adjustments as needed (See the Quality of the Evaluation section for details on data collection).

**Effectiveness of Plan for Using Resources, Personnel to Achieve Objectives:** As delineated in the organizational chart and timelines above, project objectives will be achieved on time and within budget through a combination of strong leadership, informed decision-making, and expert management by existing and new, grant-funded district- and school-based staff. District personnel will allocate appropriate time to ensure success of the project:

**District Office:** Executive Advisor – 5%, Advisor – 15%, Project Director – 50%, Project Manager - 100%, Project Coordinator - 100%

**Schools:** Principals – 50%, STEM Integration Specialists 100%, Technology Integration Specialists – 100%, Teachers – 100%

Staff hired with MSAP funds specifically for this program will devote 100% of their time to implementation of the grant. The extensive marketing/recruitment plan outlined in the Section V. below will ensure participating schools are able to attract a diverse student population. CPS is committed to the efficient use of resources to make the MSAP project successful. This includes the coordinated use of a variety of local, state, federal, and private resources, as well as MSAP funds requested from the U.S. Department of Education to support the operation of the magnet schools, including building renovations, student transportation, hiring new classroom teachers, supplies purchases, administration, and utilities.

***(2) How the applicant will ensure that a diversity of perspectives are brought to bear in the operation of the proposed project, including those of parents, teachers, the business community, a variety of disciplinary and professional fields, recipients or beneficiaries of services, or others, as appropriate.***

**Non-Discrimination Employment Practices for Project Personnel:** CPS updated its comprehensive non-discrimination policy on April 12, 2012. The policy requires that all persons, regardless of race, religion, sex, age, gender identity/expression, sexual orientation, or national origin, be afforded equal opportunities for employment and promotion. The policy ensures that minorities, disabled, and women applicants are specifically sought for openings and carefully evaluated for departments or position classifications where they are underrepresented. Personnel hired for the new magnet programs will be selected after open recruitment and competitive screening. The programs will be staffed to reflect a balance in race, sex, age, and experience.

**Encourage Greater Parental Decision Making and Involvement:** The proposed magnet schools will benefit from the successful experience of existing district magnet schools in engaging parents as well as from other successful, existing CPS structures. All CPS schools have a Local School Council (LSC), which, for elementary schools, is a twelve-member body typically consisting of the principal, two teacher representatives, one non-teaching staff member, two community members, and six parents. *LSC Parent Representatives* are elected by other parents for two-year terms. The LSC meets monthly to assess how well the school is addressing needs identified in the school's CIWP, promote parental involvement, support academic activities, and raise funds. The LSC makes important decisions as to how discretionary funds are to be spent to improve the learning climate of the school and conducts annual principal performance evaluations.

MSAP staff at each school will attend LSC meetings and, in addition, will collect parent input through surveys and community outreach. This input will be analyzed and published through the school newsletter. In addition to newsletters, interactive school websites will provide multiple ways for parents to be informed about and engaged in activities at the school. As part of the project evaluation, parents will also participate in an annual survey as well as parent focus groups. Data from these instruments will be provided to the schools and used in the program improvement process. Additional details on this process are included in the Evaluation Plan.

**Parent Teacher Organization / Parent Teacher Association:** A Parent Teacher Organization (PTO) or Parent Teacher Association (PTA) will be either formed or revised at each MSAP school. Its meetings will serve to inform parents and get their feedback about the needs of students, the theme based program and methods of instruction, and the CCSS and NGSS. Specific meeting activities will include videotapes of theme-based activities in action, field trips, special events planning, and presentations by parents, students, and teachers.

The PTO/PTA and LSC will be involved in:1) Planning and initiating extra academic and enrichment programs; 2) Expanding business and community partnerships, 3) writing grants to secure additional funding and opportunities for students; 4) recognizing academic achievement and improvement; 5) Annual Family STEM Night for students and parents. Parents will work in groups on activities to promote parental involvement in the magnet program. Each new magnet program will host one theme-based night per semester to give students and parents hands-on experiences with the curricula.

**Field Studies:** Field studies (described above) will also serve to involve parents at the school and classroom levels. Parents will be invited to participate in field studies and assist with

learning investigations in the classroom, supporting the development of academic skills and student self-esteem, and validating the importance of learning.

**Parent Orientation:** A parent orientation will be held prior to the opening of school. Shortly after school opens, an open house will be held so parents can meet the faculty and staff and learn about the curriculum and the many programs and activities available at each of the new magnet schools.

**School-Based Oversight:** Each school will have a Magnet Leadership Implementation Team (MLIT).The team will be facilitated by the Specialists at each school and include administrators, and parents. These groups will meet five times throughout the school year. Teacher members of the MLIT will be representative of the faculty and the school staff. Parent members will be representative of the student body. The role of the MLIT is to facilitate, monitor, and evaluate the implementation of the school's magnet program including such tasks as monitoring school reform efforts, reviewing the staff development plan and safe school plan, and planning student and teacher recognition, as well as coordinating pertinent school data. The MLIT will also examine data from time to time and reflect on the effectiveness of the program as well as provide feedback on program evaluation.

**Academic Advisory Panel:** Each school will also have an Academic Advisory Panel comprised of content experts, business representatives, and educators responsible for guiding development of and supplementing the academic program. A sample of the types of constituencies who will make up this committee are: (1) Universities –curriculum development, student teachers, professional development, mentors; (2) Consulates - artifacts from various countries, guest speakers, tours; (3) Businesses and Museums - mentors, guest teachers, judges for science and engineering fairs, theme related exhibits; (4) Organizations- American Library

Association, National Association of Black Engineers, Society of Hispanic Professional Engineers, Global Giving, foundation grants; and (5) Parents - guest speakers, judges for fairs.

**Student / Parent Portal:** Since 2009, the district has deployed a student/parent portal. This serves as the student- and teacher-facing portfolio for student information. The portal, available in both English and Spanish, allows parents and students to track attendance data and grading detail, including assignment level detail, and communicate with their child's teachers. The portal also offers an innovative alert tool that allows both parent and students to designate attendance and grading thresholds that result in an email or text message alert, which CPS has used to send one million text messages to date.The text-messaging feature is particularly powerful in that it bridges the digital divide for households that lack internet access. The portal also has a messaging tool that allows users to send notes to teachers without setting up an individual email account.

**Digital Access:** Over 92% of CPS students have home access to internet (University of Chicago, 2013). Low-income families with children who qualify for Free/Reduced Lunch and do not currently have an internet connection can gain access through Internet Essentials, a broadband deployment program that provides affordable internet access, computer equipment, and digital literacy training. Internet Essentials is a partnership between the City of Chicago and Comcast. As part of CPS MSAP, a significant effort will be made to promote these resources to participating students and families.

CPS has independently worked to address the digital divide to ensure that all students gain the necessary skills to use and excel with computers, the internet, apps, etc. CPS has worked to put more devices in schools (such as laptops, tablets, makerspaces, and digital whiteboards) and increase student connection to digital materials. One particularly successful pathway has

been through a fully digitized, online library platform. This virtual library can be used in addition to direct curricular interventions as students can access shared e-readers and read-aloud books during sessions. Moreover, the CPS Virtual Library augments each school's print collection of library books with access to 15,000 digital eBooks. EBooks are available on a wide range of devices, and in classrooms using projectors, digital whiteboards, or tablet devices. This system is accessible to every CPS student at any time, and both print and digital library resources are discoverable within the Seeking Online Access to Resources (SOAR). With growing interest in eBooks and an online request form for new content, the virtual library experienced 180% growth in usage in 2015.

**Student Goals:** With support from teachers, students will be asked to set and pursue semester goals for both academic and non-academic indicators that reflect progress toward college- and career-readiness. Goals will be established by teachers and students at the beginning of each semester, reviewed and revised as necessary during the semester in student/teacher review sessions. Students will share with portfolios with their parents, articulating how and why they set their goals, what their profile shows about their progress toward these goals, and what they need to do to stay on track. In this way, students will take ownership over learning goals and engage in self-reflection.

## D. QUALITY OF THE PROJECT PERSONNEL

### *(1) The project director (if one is used) is qualified to manage the project;*

**Qualifications of Personnel to be Used on the Project:** The qualifications, relevant training, and experience of the Project Director and key personnel, who will play a large part in the success of CPS' MSAP, follow below. Personnel chosen to implement the CPS MSAP grant

are highly qualified professionals with significant experience in curriculum development and desegregation strategies (see Appendix for resumes). Because CPS MSAP coordinates with the mission and initiatives of the Office of Teaching and Learning, particularly those of the Magnet, Gifted, and Talented sub-department, contributions of time from existing staff will be leveraged as in-kind contributions to ensure appropriate oversight.

**Project Director (PD):** Michelle Frazier, Ed.D, CPS Elementary Magnet Schools Coordinator, will serve as Project Director, devoting 50% time to daily implementation of CPS MSAP. As PD, Dr. Frazier will provide leadership and direction to the project, assist with recruitment of staff and students; develop and implement a professional development plan for each magnet theme; collaborate with the external evaluator to manage the collection, dissemination, and use of project evaluation data; and monitor implementation at school sites. Dr. Frazier regularly conducts on-site visits, observing classes and working with staff to improve program delivery and increase parent involvement. To provide leadership to schools transitioning to a new educational focus, she has also attended theme-related trainings for STEM and will share this knowledge in upcoming workshops and informational meetings. Additional responsibilities include supervising the Program and Content/Curriculum Specialists, STEM Project Manager, and the Project Coordinator. She will meet regularly with key staff, identifying and contracting with external partners, submitting annual performance reports, and ensuring fiscal integrity/adherence to grant requirements.

Dr. Frazier served as Project Director for previous two successful CPS MSAP grants (2004-2007 and 2007-2010), which developed the district's first World Language Academy with a focus on critical languages and the first Children's Engineering program, as well as Montessori and International Baccalaureate magnet schools. Dr. Frazier holds a Doctorate in Education on

curriculum and instruction from Loyola University-Chicago (LUC) and has extensive knowledge and expertise of curriculum development and desegregation strategies. Her research focused on elements of effective Professional Development for transitioning teachers to new curricula and models of teaching. In addition to 14 years as an administrator, Dr. Frazier spent 24 years as a classroom teacher which fostered understanding of academic, developmental, and social needs of students. (See Appendix for resume).

***(2) Other key personnel are qualified to manage the project;***

**Executive Advisor:** LaTanya McDade, Chief Officer, CPS Office of Teaching and Learning, will serve as Executive Advisor. Ms. McDade has over 20 years of experience, spent at CPS. She is a lifelong educator, having risen through the ranks to her current role as Chief of Teaching and Learning (OTL) for the district. Ms. McDade has a proven track record of leading initiatives that demonstrate remarkable results in improving student achievement. (See Appendix for resume).

**Advisor:** As Executive Director of STEM Initiatives, Rukiya Curvey Johnson, leads the development and execution of the district's K-12 STEM strategy, the incubation of STEM-inclusive elementary schools and Early College STEM High Schools. Her work includes collaborating with STEM school leaders to drive whole school change, planning STEM curriculum and programming, strengthening community engagement and awareness, connecting STEM pathways through enrichment, and fostering external partnerships. Most recently, Ms. Curvey Johnson completed development of the CPS STEM Standards for Success, a set of benchmarks and criteria for defining STEM schools. Ms. Curvey Johnson previously served as a Director in the Office of School Improvement where she led the implementation and execution

of nationally-recognized turnaround and transformation school reform models in both elementary and high schools (See Appendix for resume).

**STEM Project Manager:** A full-time, grant-funded STEM Project Manager will be hired to support program implementation. The individual in this position will report to the Project Director. His/her primary responsibilities will be to lead the implementation of the STEM program as outlined in the grant and facilitate curriculum and staff development. Duties will include: (1) working with key stakeholder to develop and implement academic interventions for remediation, acceleration, and enrichment (2) coordinating staff development and curriculum development activities, (3) serving as an active member of each school's Magnet Leadership Implementation Committee, (4) coordinating and facilitating meetings; (5) collaborating with the Project Director to prepare presentations; and (6) supporting the Project Director on other daily implementation issues as needed. Qualifications will include holding a master's degree, teacher certification, at least five years teaching experience and three years coaching and/or administrative experience.

**Project Coordinator:** A Project Coordinator will provide administrative support for all project activities. This individual also reports to the Project Director and is responsible for driving high-quality implementation of the STEM program and the day-to-day operations, coordination, and data analysis of program, projects and community outreach. Duties include:(1) assist in organizing operations and coordinating interactions with partners, contractors, and school staff, (2) coordinate logistics for a variety of STEM PD, special events, and community outreach activities, (3) collaborate with consultants and school staff to develop appropriate and appealing marketing tools (brochures, websites, advertisements, school tours, and community outreach projects), (4) assist the Project Director in preparing reports, correspondence and

newsletters, and (5) maintain an inventory of project purchases (See Appendix for full position description including qualifications).

**Principals:** The leaders of the new magnet schools will possess the following qualities- proven ability to lead change interested in creating supporting a diverse learning environment strong leadership skills interpersonal skills

**School Based Project Management Staff**

**STEM Integration / Technology Integration Specialists:** The STEM Integration and Technology Integration Specialists will be hired at each school based on the recommendations of the Principal, Project Director, STEM Project Manager, and other stakeholders. The Specialists will serve as site manager and be responsible for the day-to-day operation of the program. The Principals and Specialists, with input from the Project Director, will be responsible for overall program implementation including staff evaluation, staff development, and curricular development. Specialist qualifications include: (1) teacher certification, (2) 3-5 years experience as a teacher leader and/or coach, and (3) experience working in an urban school district with diverse student populations. This position must commit to completing extensive courses (at MSAP expense) to be offered at the new magnet schools. Additional criteria for selection includes: (1) experience developing and evaluating curriculum in one or more subject areas, (2) sensitivity to the needs of minority students as evidenced by successful teaching / administrative experience, and (3) experience teaching in a multi-ethnic settings and the ability to assist classroom teachers in implementing magnet strategies.

Two specialists will be assigned to each school to aid in developing and integrating the STEM culture and practices throughout the school. These specialists will work as a team and

responsibilities include leading the development of STEM and problem-based curriculum units, and providing professional development to teachers. Specialists will model lessons, coach teachers and provide feedback to update teachers' knowledge regarding instructional strategies and activities that have proven successful with students from various backgrounds. They will work with the principal to guide shifts in instructional practices to transition teachers towards a STEM model which focuses on collaborative experiences, student creativity, critical thinking learning challenges, communication skills.

Our current STEM specialists have varied experiences- a few have engineering backgrounds, several are National Board certified, and some served as lead teachers and instructional coaches prior to being chosen for Chicago Public Schools' newest STEM Initiative schools. Although personnel for the Specialist positions have not yet been hired, the following profiles exemplify the caliber of professionals currently employed by CPS and types of candidate to be sought:

Latina Taylor, James Harris, and Michelle Warden are an example of the caliber of staff who have (and may serve) as **STEM Integration Specialists.** They have a combined total of 44 years of education experience and bring a variety of experiences to their work. They aid teachers to integrate interactive technology strategies and tools into the classroom curriculum across content areas. They expand teachers' knowledge in the use of the district's Google platform for instructional purposes and introduce new programs and tools to teachers such as Scratch for coding, iMovie and PowerPoint for presentations, Puppet Pals and ToonTastic for storytelling, Educreations and Photoshop for drawing tools, and Socrative, Probes, and heart rate monitors for data collection and analysis. They work with teachers to promote the use of technology into

instructional practices is designed to ensure that students become proficient with the use of technology for various purposes and that classrooms are engaging and interactive.

Additional criteria includes: (1) the knowledge of new instructional technologies and their use in the classroom and a willingness to continue to learn additional instructional technologies, (2) demonstrate ability and/or willingness to work collaboratively with a diverse school community to promote STEM awareness and engagement through targeted partnerships and activities, and (3) demonstrate the ability to use multiple kinds of technologies (Smart Board, digital cameras, iPads,), and software in daily teaching. Be proficient in electronic communication (ex. Email, Google docs, websites, blogs).

As another example of the type of staff recruited within Specialist roles, Leslie Armstrong, Tashena Chumrley, and Yolanda Sanders have served as **Technology Integration Specialists**. They have a combined total of 58 years of education experience. They work with teachers to understand and unpack the alignment of the Common Core State Standards (CCSS) math practices, the Next Generation Science Standards (NGSS) science practices with engineering practices. They work with teachers to make these practices visible across all content areas including reading, social studies, and specials (pe. Art) and support teachers in designing STEM units which include activities in which the knowledge gained has a real world application and expose students to STEM career pathways.

Specialists also reinforce the integration of technology into teachers' instructional practices with experiences including creating a presentation explaining how to solve a problem in math, using the storytelling programs to capture their understanding of a book in literacy, presenting a summary of an historical event using iMovie in social studies, and the use of heart

rate monitors in a transdisciplinary unit focused on the connection between physical education and science.

Both sets of Specialists will need to have:

(1) experience and ability in collaborative instructional planning with professional colleagues, (i.e., candidates must make a commitment and demonstrate ability to guide the vertical and interdisciplinary alignment of STEM maps), and (2) experience working with adult learners and knowledge of various coaching models.

Additional criteria includes: (1) a deep content understanding of major concepts within specialty area that are covered within elementary curriculum (i.e. science or math), (2) a strong understanding of problem-based unit development, specifically understanding how to interconnect concepts from specialty area with other content area, (3) knowledgeable and willing to teach and support others in the teaching of inquiry-based curriculum in science and/or math (FOSS, Everyday Math), and (4) experience using Problem-based learning and/or Backward Design as tools to design curricular units and plan lessons.

**Program Evaluation:** Program Evaluation will be conducted by American Institutes for Research (AIR). Dr. Nick Sorenson is the lead evaluation on all projects. Dr. Sorenson has extensive experience evaluation, designing, and implementing state and federally funded projects; including years of experience in the educational sector. Dr. Sorenson will work closely with AIR Associate, Megan Brown. Together, they will collaborate on the implementation of the rigorous formative and summative evaluation plan.

***(3) Teachers who will provide instruction in participating magnet schools are qualified to implement the special curriculum of the magnet schools.***

The faculty at each school will be vital to the success of the program. District screening, application, and selection procedures are followed in placing teachers in magnet schools. Special attention will be given to recruitment practices in CPS MSAP schools to ensure the staff at each magnet site includes minority representation and an appropriate gender balance.

The new magnet schools will be comprised of both new and existing teachers and educational support staff. All of the target schools are under-enrolled so they will require additional staff. New teachers and staff will be selected based on personnel records, interviews, recommendations, and knowledge of curriculum development and desegregation strategies.

Teachers hired for the programs will possess skills in integrating technology into the curriculum, interdisciplinary instruction, authentic assessment, and providing experience-based learning opportunities. Teachers chosen will be individuals who acknowledge and welcome the valuable resources that parents and community leaders bring to the educational setting.

All teachers must commit to participate in approximately 90 hours of professional development annually to prepare them to effectively implement the special curricula of the new magnet programs. Teachers will also be supported through regular participation in school-based professional learning communities where they share effective practices; discuss and reflect on curricular and pedagogical strategies learned in professional development; collaboratively develop, revise, and reflect on new curriculum; discuss classroom and student-level issues, develop data-based strategies for accelerating student achievement for both individuals and groups of students, model teaching methods, share new resources, and identify local implementation issues to be surfaced to the principals and Project Director as they arise.

**Table 7: Key Personnel and Relevant Experience Related to Project Objectives**

| Name and | Years | Curriculum | Best | Alternative | Desegregation | STEM | Funding | % |
|---|---|---|---|---|---|---|---|---|
| Michelle Frazier<br>*Project Director* | 34 | X | X | X | X | X | District | 50% |
| LaTanya McDade<br>*Executive Advisor* | 19 | X | X | X | X | X | District | 5% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Rukiya Curvey Johnson<br>*Senior Advisor* | 9 | X | X | X | X | X | District | 10% |
| Principals to be named) | | X | X | X | X | X | District | 50% |

The above table represents the experience, knowledge, and training of existing personnel related to project objectives. New personnel hired for the project will also be required to have experience in the above fields.

## E. QUALITY OF PROJECT EVALUATION

A team from American Institutes for Research (AIR), led by Dr. Nicholas Sorensen and Megan Brown, will conduct a rigorous external evaluation of the CPS MSAP initiative. First, AIR will conduct a formative evaluation to provide feedback toward program improvement. This evaluation plan is tied directly to the above goals and anticipated outcomes. Project success will rest on continual progress made towards these metrics in realizing short-term, intermediate, and long-term goals (including those beyond the initial funding period). Additional quantitative and qualitative data collected in the process also will be used to assess progress toward **objective performance measures** in a performance evaluation, above and beyond those required by the US Department of Education.

Secondly, AIR will conduct a summative evaluation to examine impact on student outcomes by drawing on a natural experiment, supplemented with a quasi-experimental design (QED), which will **produce evidence of promise** (as defined in the notice) for students participating in the STEM magnet program. Following the summaries of the proposed evaluations, the proposal details evaluation costs and explains how those **costs are commensurate** with the scope of the project's proposed evaluation.

As outlined in Table 8, the proposed study will employ annual data collection through site visits (i.e., classroom observations, teacher and parent focus groups, and principal interviews), surveys (i.e., student, parent, and teacher), collection of school and program

documentation (i.e., school improvement plans, professional development attendance data), and extant data (i.e., student attendance and achievement data, student and teacher survey data). The evaluation is intended to be informative to the three MSAP schools, as well as CPS, who oversees the larger initiative. Therefore, following data analysis, AIR will produce memos for each of the three participating schools (for formative purposes) and annual reports for CPS for improvement purposes and for grant reporting.

**Table 8. Study Timeline**

| **Project Year** | **Year 1** | | | | **Years 2–4** | | | | **Year 5** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Calendar Year** | **2017** | **2018** | | | **2019–21** | | | | **2022** | | | |
| **Quarter** | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 |
| **Formative and Performance Evaluations** | | | | | | | | | | | | |
| Instrument Development | X | | | | | | | | | | | |
| Site Visits (observations) | | X | | | | X | | | | X | | |
| Site Visits (focus groups, interviews) | | X | | | | X | | | | X | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Surveys of Students, Parents, and Teachers | | X | | | | X | | | | X | | |
| Program Documentation Collection | | | X | | | | X | | | | X | |
| Analysis | | | X | | | | X | | | | X | |
| Individual School Memos | | | X | | | | X | | | | X | |
| Annual Report | | | X | | | | X | | | | X | |
| **Summative Evaluation** | | | | | | | | | | | | |
| Identify Comparison Sample | | | | | | | X | | | | | |
| RCT | | | | | | X | X | X | X | X | X | |
| Propensity-Matched Study | | | | | | X | X | X | X | X | X | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analysis/Reporting | | | | | | | X | | | | | X |

In the following sections, we summarize our approach regarding each of the evaluation criteria specified in the notice.

***A. The extent to which the methods of evaluation include the use of objective performance measures that are clearly related to the intended outcomes of the project and will produce quantitative and qualitative data to the extent possible.***

An important step in any initiative, new or seasoned, is to assess not only whether activities take place but to identify areas for improvement. Also important is an assessment of how the program is progressing toward meeting performance measures. Therefore, AIR will conduct formative and performance evaluations to provide important feedback and data regarding program implementation. The formative evaluation research questions and data sources are summarized in the following subsections, followed by the summative evaluation research questions and proposed analyses for both evaluations.

**Formative Evaluation.** The formative evaluation will answer the following two research questions:

1. *To what extent is the program being implemented as intended?*

2. *In what ways can program implementation be improved?*

A range of data will be collected to address Research Questions 1 and 2 and inform program improvement:

· Teacher focus groups will be conducted once each school year (in February) to gather feedback on professional development and need for additional supports in the classroom. Two focus groups will be conducted at each school at each visit: one with lower grades (K–5) and one with upper grades (Grades 6–8) to align with the curriculum grade bands. One teacher per grade will be randomly selected to participate.

· Parent/guardian focus groups will be conducted once each school year (in February) to gather parent input on the school and suggestions for increasing parent involvement. Two focus groups will be conducted at each school during each visit: one with parents of students in lower grades (K–5) and one with parents of students in upper grades (Grades 6–8). Students will be randomly selected, and AIR will send invites home with those students for their parents or guardians to participate.

· Principal interviews will be conducted once each school year (in February) to obtain their perspectives on project implementation, including the transition to STEM focus, quality of professional development, and need for additional support.

· A student survey will capture student experiences and opinions related to the initiative. The survey will be developed in the first year of the project for administration in October and February of Year 2 (2018–19 school year) and February of each subsequent year. The survey will consist of existing, validated measures of four areas of student experience: attitudes toward STEM, opportunities for deeper learning (e.g., collaboration, complex problem solving, real-world connections), attitudes toward diversity (e.g., openness to multiple perspectives), and social and emotional skills (e.g., self-efficacy, intrinsic motivation, self-regulated learning). All students in Grades 5–8 will be invited to complete the survey.

· Classroom observations will be conducted once each school year (in March). The team will observe two teachers per grade in mathematics and two per grade in science, for a total of up to four teachers each visit. For mathematics observations, AIR will employ an AIR-developed student-centered mathematics observation rubric to measure the degree to which students were actively learning and connecting new mathematical ideas, solving challenging problems, and justifying their explanations and critiquing the reasoning of others. In science, AIR will use the Reformed Teaching Observation Protocol (RTOP) to measure the extent to which science classrooms reflected standards-based, inquiry-oriented approaches to teaching. In addition, all participating teachers will be observed using the Classroom Assessment Scoring System (CLASS), which examines student-teacher interactions within three broad domains (Emotional Support, Classroom Organization, and Instructional Support).

**Performance Evaluation Data.** The performance evaluation will answer the following research question:

*3. To what extent is the program meeting objective performance measures (as identified in the grant proposal)?*

To address Research Question 3 and assess progress toward objective performance measures, AIR will employ both qualitative and quantitative data as described in the following summaries of the data sources:

· The student survey administered each February to students in Grades 5–8 for the formative evaluation also will include learning environment items regarding Objective Measure 2.3.

· A teacher survey will be developed in Year 1 and administered in February of each year to capture measures of teachers' experiences and opinions in the magnet schools. The survey will include items regarding instructional quality (Measure 2.1), use of MSAP site-based identified

best practices (Measure 2.2), quality of staff development activities (Measure 3.1), and PLC participation (Measure 3.2).

· Program documentation will be collected each March to assess professional development participation (Measures 3.5 and 3.6), teacher-submitted forms regarding the use of technology (Measure 3.7), and school strategic plans (Measures 1.5 and 4.6). In addition, AIR will collect documentation regarding attendance at parent events (Measure 4.2) and parent response to requests for magnet planning or implementation ideas (Measure 4.3) as well as data on the number of student applications to the schools (Measure 1.4).

· A parent survey will be developed in Year 1 and administered online in February of each year; parents will be contacted via text or email (depending upon available contact information). The survey will include items regarding perceptions of opportunities to provide input into magnet planning and decision-making (Measure 4.1) and opinions of the involvement of community partners (Measure 4.4).

· During the parent focus groups conducted each February, parents will be asked to share their experiences regarding opportunities to be active in magnet planning, implementation, and decision-making (Measure 4.5).

· Classroom observations will be conducted each March using a rubric newly developed for the study to capture performance measures. Specific measures include quality of learning environment (e.g., interactive, technology availability, use of best practices, promoting diversity, and students demonstrating 21st century skills; Measure 2.4) and instructional rigor (e.g., challenging materials, alignment with state assessment proficiency standards, and technology integration; Measure 3.3).

· Student demographic data will be collected each year to assess reduction in school minority group isolation of African American students at Brown and Claremont (Measure 1.1 and 1.2) and Jungman (Measure 1.3)

· Student achievement data (ELA and mathematics standardized test scores) will be collected and analyzed to assess improvement in student performance (Measures 5.1 and 5.2)

**Analysis.** Multiple analyses will provide formative feedback and recommendations for refinement to tools and services (e.g., identifying areas for improvement in trainings) and will be delivered in time for such revisions to take place prior to the next school year. When relevant, they also will be used to report on progress toward performance measures. Interview and focus group transcripts will be analyzed qualitatively with NVivo software, identifying key themes with examples and quotations. Several methods are used to increase the accuracy and trustworthiness of the qualitative analysis, including developing an analysis plan, creating a written coding structure, using multiple data analysts with strong interrater reliability, and conducting quality review spot checks of coding. Scale survey data will be analyzed psychometrically to examine statistical validity and reliability using the Rasch rating scale model (Wright & Masters, 1982), and the resulting scale scores can be used in parametric inferential models exploring the relationship between implementation and outcomes. Quantitative data (e.g., survey scale scores, survey item responses, observation ratings, administrative data) will be summarized using descriptive statistics (i.e., multiple measures of central tendency and distribution information).

***B. The extent to which the methods of evaluation will, if well-implemented, produce evidence of promise (as defined in this notice).***

AIR's summative evaluation is designed to provide rigorous evidence of the impact of the whole-school STEM magnet program in two ways. First, to assess the impact of enrolling in one of the three whole-school STEM magnet programs for students who apply and are enrolled based on lottery, AIR will draw on a natural experiment and conduct a student-level randomized controlled trial (RCT) designed to meet What Works Clearinghouse (WWC) Evidence Standards without reservations by comparing outcomes for students who apply and are admitted based on the lottery (treatment group) with students who apply but are not admitted based on the lottery (control group). Second, the evaluation will employ a rigorous QED designed to meet WWC Evidence Standards with reservations by comparing outcomes for students currently enrolled (not admitted by lottery) in the three schools that will establish whole-school STEM magnet programs with their matched peers in similar non-magnet schools in the district. Together, the RCT and QED will provide estimates of impact for newly enrolled students and currently enrolled students respectively in the three schools participating in the STEM magnet program.

Thus, the proposed RCT will address the following research question:

*4. What is the impact of the whole-school K–8 STEM magnet program* ***for newly enrolled students*** *in the three schools following the establishment of magnet programs (admitted by lottery) on their experiences school, behaviors, academic outcomes, and likelihood of interacting with a student of a different racial/ethnic background in their school?*

The proposed QED will address the following research question:

*5. What is the impact of the whole-school K–8 STEM magnet program* ***for students already enrolled*** *in the three schools prior to becoming STEM magnet programs (not admitted by*

*lottery)[6] on their experiences in school, behaviors, academic outcomes, and likelihood of interacting with a student of a different racial/ethnic background within their school?*

**Outcome Data Sources.** As part of AIR's master data sharing agreement with CPS, the summative evaluation will minimize burden and efficiently draw on extant data including school climate assessments and student records. Specifically, for the 2018–19, 2019–20, 2020–21, and 2021–22 school years, AIR will obtain measures of student experiences in school from responses to the 5Essentials student survey administered annually to all CPS students in Grades 6–8 within K–8 elementary schools. Similarly, for these school years, attendance and a measure of structural diversity will be obtained for students in all grades (K–8), and behavioral data (suspension), course performance data (grade-point average), and test scores will be obtained for students in Grades 3–8. Specific outcome measures and data sources are detailed in Table 9.

**Table 9. Student Outcomes and Data Sources for Summative Evaluation**

| Student Outcome | Measure | Data Source |
|---|---|---|
| **Experience in School** | **Academic Personalism**<br>Teachers connect with students in the classroom and support them in achieving academic goals. | 5Essentials Student Survey |
| | **Peer Support for Academic Work** | |

| | | |
|---|---|---|
| | Students demonstrate behaviors that lead to academic achievement. | |
| | **School Safety**<br><br>Students feel safe both in and around the school building and while they travel to and from home. | |
| | **Student-Teacher Trust**<br><br>Students and teachers share a high level of mutual trust and respect. | |
| | **Academic Press**<br><br>Teachers expect students to do their best and to meet academic standards. | |
| | **Classroom Rigor**<br><br>Teachers encourage all students to make connections and seek multiple perspectives through their coursework. | |

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|---|---|---|
| | **Course Clarity**<br><br>Students are provided clear learning goals and instruction that supports achievement. | |
| | **Emotional Health**<br><br>Students have the skills to nurture positive and respectful relationships with others. | |
| | **Grit**<br><br>Students sustain interest and effort toward long-term goals. | |
| | **Parent Supportiveness**<br><br>Parents support their children emotionally and developmentally. | |
| | **Rigorous Study Habits**<br><br>Students set aside time for schoolwork and give priority to studying. | |
| | **School Connectedness**<br><br>Students feel included in their school's community. | |

| | | |
|---|---|---|
| | **Student Peer Relationships**<br><br>Students treat each other with respect, work well together, and help each other learn. | |
| | **Math Instruction**<br><br>Students interact with course material and one another to build and apply knowledge in their mathematics classes. | |
| | **English Instruction**<br><br>Students interact with course material and one another to build and apply critical reading and writing skills. | |
| | **Science Instruction**<br><br>Students conduct scientific investigations, including generating and testing hypotheses, writing lab reports and using laboratory equipment. | |
| **Behavior** | **Attendance**<br><br>Percentage of instructional time missed | |

| | | |
|---|---|---|
| | **Suspension**<br><br>Whether or not a student was suspended each year | **District Admin Records** |
| **Academic Outcome** | **Course Performance**<br><br>Average grade-point average on a 4.0 scale | |
| | **Student Achievement—Partnership for Assessment of Readiness for College and Careers (PARCC)**<br><br>Scaled-scores for Math and Reading | |
| | **Student Achievement—Northwest Evaluation Association (NWEA) Measures of Academic Progress (MAP)**<br><br>Scaled-scores for Math, Reading and Science (if applicable) | |
| **Integration** | **Structural Diversity**<br><br>Likelihood that a student could interact with a student of a different racial/ethnic background within his or her school. | |

**Student-Level Randomized Controlled Trial.** To address Research Question 4, AIR will conduct a student-level RCT to examine the impact of the STEM magnet program implementation for students who apply to the program and are admitted based on the lottery to Brown, Claremont, and Jungman following the establishment of the whole-school STEM magnet program. Because enrollment to each of the three established magnet schools is lottery-based, and because other STEM magnet programs within the district typically have more students who apply and are not offered admission than students who apply and are offered admission (based on available space to accommodate additional students), the admissions process allows AIR to leverage a natural experiment to provide an unbiased estimate of impact on student outcomes.

The inferences that we make about the impact of the whole-school STEM magnet program are based on the Neyman-Rubin-Holland (NRH) approach to causality. This approach relies on counterfactuals and potential outcomes (Holland, 1986, 1988; Rubin, 1974, 2004). A primary threat to internal validity is nonequivalence of units at baseline, which in this case refers to differences between characteristics of students in the treatment and control groups that exceed a recommended threshold (e.g., standardized mean difference of 0.25 or greater per WWC Evidence Standards, based on Ho, Imai, King, & Stuart, 2007). Lottery-based random assignment mitigates the threat of non-equivalence. However, AIR will collect the student identifier of all students who apply for enrollment to the STEM magnet program at each treatment school for each school year within the evaluation, and whether or not the student was assigned by lottery to enroll in one of the three treatment schools. AIR will then compare baseline student characteristics (e.g., race/ethnicity, gender, prior achievement) of students who are offered admission (treatment group) with those who are not offered admission (control group) based on the results of the lottery. Following WWC guidance, for differences in baseline

characteristics that range from 0.05 to 0.25, AIR will statistically adjust for these differences by including these baseline characteristics in impact models.

All students in the treatment and control group will be tracked longitudinally, and all outcomes for these students as detailed under Table 9 will be examined using extant data under AIR and CPS's master data sharing agreement.

**Propensity-Score Matching Quasi-Experimental Design.** To address Research Question 5, AIR will employ a quasi-experimental propensity-score matching (PSM) design to examine the impact of the STEM magnet program implementation for students already enrolled in Brown, Claremont, and Jungman prior to the establishment of the whole-school STEM magnet program. AIR will develop a matched comparison sample in two stages. First, we will match each of the three K–8 treatment schools with the three most similar traditional (non-magnet) K–8 elementary schools based on school characteristics (e.g., percentage of African American, percentage of Latino, district network [a marker for geographic location within the city], percentage proficient in mathematics and reading, etc.) obtained prior to implementation of the whole-school STEM program. Second, within the analytic sample of three treatment schools, and nine matched comparison schools, AIR will propensity-match students already enrolled in the treatment schools with similar students in comparison schools. Specifically, we will develop a selection model that uses school and student characteristics to predict whether students enroll in treatment schools. This model generates a predicted value (a propensity score) for each student's likelihood of enrolling in a treatment school given his or her background characteristics and prior achievement. Then, we will use the propensity scores to create a matched comparison sample of students who did and did not enroll in the treatment schools but share similar propensities to do so—thereby minimizing self-selection bias and maximizing internal validity to

the extent possible. Because a school-level QED or cluster-randomized trial meeting evidence standards would be inadequately powered and cost-prohibitive, matching students in treatment schools with similar counterparts in comparison schools will allow for the most efficient and unbiased analysis of student-level treatment outcomes.

Because the pool of potential matched control students is large, we will use nearest-neighbor matching techniques (Rubin, 1973) to identify matches within grade levels. However, we will modify our PSM approach as necessary to optimize balance (on pre-intervention outcomes and demographics) between the treatment and matched comparison samples. AIR has conducted similar PSM studies (e.g., IES Grant R305A150403) with CPS and developed comparison samples matching 95% of treatment students, using small calipers (0.10) for differences in propensity, resulting in no differences in baseline characteristics exceeding 0.25 standard deviations per WWC.

**Analyses of Impact.** Using an intent-to-treat approach, a regression model will estimate the relationship between treatment status (enrollment versus not in one of the three whole-school STEM magnet programs) and each outcome while controlling school and student characteristics as appropriate to allow for residual covariate adjustment. All analyses will be conducted separately for the RCT component focusing on assessing impact for newly enrolled students (based on lottery) and for the QED component of the summative evaluation focusing on assessing impact for students already enrolled (not based on lottery) in the three treatment schools. To account for the possibility that analyses of multiple measures could inflate estimates of statistical significance, we will use the Benjamini-Hochberg correction. As recommended by WWC, we will make corrections for multiple comparisons within the same outcome domain. Sensitivity analyses will determine whether findings are robust to modeling approach (multi-

level modeling, clustered standard errors) and missing data approach (listwise deletion, inverse probability weighting).

CPS expects to serve a total of 1,770 students enrolled in Brown, Claremont, and Jungman under the whole-school STEM magnet program, including 984 currently enrolled students (prior to establishment of the program) and 786 new students to be offered enrollment based on the results of the lottery (following establishment of the program). Given these assumptions, impact analyses for the RCT are powered for minimal detectable effect sizes (MDESs) of 0.09, 0.11, and 0.16 for outcomes that draw on students from Grades K–8, 3–8 and 6–8 respectively. Similarly, impact analyses for the QED are powered for MDESs of 0.08, 0.10, and 0.15 for outcomes that draw on students from Grades K–8, 3–8 and 6–8 respectively.

**Strategies for Addressing Study Limitations.** Although both the RCT and QED components of the summative evaluation are designed to maximize internal validity to the extent possible, a first limitation is that findings from both the RCT and QED may not be generalizable to all schools or students in the district. To address this limitation, AIR will use posttratification weighting to examine the extent to which the observed impacts would be expected if the students enrolled in STEM magnet programs at Brown, Claremont, and Jungman mirrored the characteristics of the district as a whole and/or the population of students in CPS that apply for enrollment in these types of programs.

A second limitation within the RCT component of the summative evaluation is that students who apply for admission to the STEM magnet program at Brown, Claremont, or Jungman but who, as a result of the lottery, are not admitted could subsequently apply for and be admitted to other magnet programs elsewhere in the district. Conversely, students who are admitted as a result of the lottery could subsequently enroll in a non-magnet school within the

district. These "crossovers" compromise the intent-to-treat contrast between enrollment in a STEM magnet program and a traditional K–8 elementary school. To address these limitations, AIR will supplement intent-to-treat impact analyses for the RCT with complier average treatment effect analyses for each outcome. The complier average treatment effect, also referred to as the "local average treatment effect" (Angrist, Imbens, & Rubin, 1996; Gennetian, Morris, Bos, & Bloom, 2005), represents the treatment effect on those who comply with their treatment assignment (i.e., students who are assigned by lottery to enroll and who do enroll in one of the three STEM magnet schools, and students who are assigned by lottery to not enroll and who do not enroll in a magnet school in the district).

AIR will estimate the effect of STEM magnet program on compliers using an instrumental variable approach—an approach that is particularly well suited for complier effect analysis in an experimental context (Angrist et al., 1996; Gennetian et al., 2005; Schochet & Chiang, 2009). For the proposed study, the lottery-based random assignment will be a natural instrument because the random assignment procedure is expected to have a positive effect on participation in the STEM magnet program, and participation in the STEM magnet program is likely to be the only plausible path through which the random assignment procedure could improve student outcomes. Using the Stata program *ivreg2* (Baum, Schaffer, & Stillman, 2010), we will first obtain the predicted probability of enrolling in a STEM magnet school for each student based on a linear probability model. Second, the predicted probability of enrollment will be used to predict each student outcome. The equation used to predict each student outcome will be similar to the main impact model, except that the binary treatment indicator will be replaced with the predicted probability of enrollment in a STEM magnet school. The coefficient for the

predicted probability of enrollment in a magnet school will represent the effect of the STEM magnet program on student outcomes for students who comply with lottery-based assignment.

### *C. The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project.*

The budget for the proposed evaluation is $999,969. As summarized in Table 10, the annual costs range from $129,269 to $228,362. Year 1 focuses mainly on instrument development and data collection, analysis, and reporting for the formative and performance evaluations. Subsequent years include site visits, survey administration, and document data collection, as well as local travel and incentives for focus groups and parent surveys. The summative evaluation begins in Year 2 with the identification of the comparison group sample, with analysis of student data for the QED and RCT beginning in Year 3 (assuming November data availability) and continuing through Years 4 and 5.

**Table 10. Evaluation Budget**

| Year | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Total |
|---|---|---|---|---|---|---|
| **Budget** | *$129,269* | *$212,453* | *$209,097* | *$220,787* | *$228,362* | **$999,969** |

The proposed budget is appropriate for the objectives, design, and potential significance given it meets the needs for measuring performance, provides formative feedback, and includes a rigorous summative evaluation. AIR and the principal investigator for this evaluation have extensive experience conducting federally funded experimental and quasi-experimental studies. Further, AIR deploys its deep expertise to engage in research, policy, and practice activities that

can help inform and improve access and equity to STEM educational and career pathways, from early childhood through postsecondary education and into emerging STEM careers.

AIR also brings institutional capacity that ensures high-quality research. As part of AIR's internal project review procedures, Brown will confer at least bi-monthly with members of the AIR senior management team to review the project's performance; the status of upcoming deliverables; staffing needs; and any possible problems that may arise with respect to substantive performance, scheduling, staffing, or project costs. These meetings work to ensure that the project runs smoothly and has appropriate resources and that any issues that arise are addressed proactively. In addition, the project's QA reviewer is independent of the project team and will regularly monitor and ensure the quality of the project and the deliverables.

The project will leverage efficiencies to keep costs down. Project leadership (Dr. Sorensen and Brown), as well as site visitors, are located in AIR's Chicago office, requiring only local travel for site visits and in-person meetings. AIR's existing master data-sharing agreement with CPS will facilitate efficient sharing of data, eliminating the time and resources typically needed for obtaining research approval and establishing data-sharing procedures and expectations. Finally, the project takes advantage of a natural experiment in the lottery system for the magnet schools, minimizing AIR staff time in overseeing random assignment.

**Credentials of Evaluation Planners:**

AIR, an independent, nonpartisan, not-for-profit, will lead the evaluation component. The following staff will oversee the project:

**Nicholas Sorensen, Ph.D.,** a principal researcher in the Research and Evaluation program and the Director of the Technology for Teaching and Learning practice area at AIR, will

serve as the principal investigator for the evaluation component of the project. He brings a wealth of experience to the project. Currently he is a principal investigator on two IES-funded students partnering with CPS that share similar designs. One is focused on using a continuous improvement approach to develop and refine a sustainable Pathways to Success intervention. Another uses a rigorous propensity-matched design to examine the short and longer-term outcomes for students who take eighth-grade algebra with different levels of readiness, to inform the development of course placement policies that better support struggling students. He currently manages projects with budgets totaling more than $14M. Dr. Sorensen has extensive experience in analyzing complex data and experimental and quasi-experimental study design. He has also received extensive formal training on improvement science methodology for education from the Carnegie Foundation for the Advancement of Teaching. He received his doctorate from the University of Michigan in social psychology with specialized training in developing and testing preventive interventions and policy evaluation. He has published in a wide range of outlets, including top academic journals, IES-NCEE evaluation reports, policy briefs, and practitioner-focused reports; he has presented this work at numerous conferences targeting researchers, policymakers, and practitioners.

**Megan E. M. Brown,** is a senior researcher at AIR and will serve as the evaluation project director. Ms. Brown has expertise in project management, qualitative research design, large-scale survey development and administration, and the CLASS observation tool. She currently serves as project director of the Impact Evaluation of the Girls Inc. Experience, which assess the impact of programming and the conditions under which programming can be most successful as well as data collection capacity building for Girls Inc. sites. Ms. Brown also serves as the data lead for the A Multisite Randomized Controlled Trial of Descubriendo la Lectura

(DLL), funded by the Institute of Education Sciences (IES). In this role she leads instrument development, oversees data collection, and oversees implementation data analysis and reporting. Previously, Ms. Brown was the project director for the Future Ready Leaders Study for the Office of Educational Technology (OET). The project examines the use and application of learning from the online professional learning tools created by OET to support district superintendents in integrating technology in a meaningful and productive manner. Ms. Brown earned a master's degree in public policy from the Hubert H. Humphrey School of Public Affairs: University of Minnesota.

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