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Introduction: Community School Districts 14 and 32 in New York City have formed An Interdistrict consortium to apply for the Magnet Schools Assistance Program (MSAP). **Both Community School Districts 14 and 32 have not received funds under this program in the last fiscal year of the previous funding cycle. District 32 has never received MSAP funding.** The Districts 14/32 Interdistrict Consortium is applying for MSAP funding to establish ***new*** magnet programs at the five project schools – PS 120, PS 123, PS 157, PS 196, and MS 582.

***Districts 14 and 32 Interdistrict Consortium- Expanding Choice*:** The Superintendents in School Districts 14 and 32 believe that now is the time to tackle entrenched minority group isolation and socioeconomic isolation in their schools. Both districts border each other in Brooklyn – a borough in NYC where the population is changing dramatically, primarily due to gentrification. Many School District 14 neighborhoods, such as Williamsburg, Greenpoint and Fort Greene, which were poor and crime ridden with inadequate housing, are now boasting million dollar condominiums. However, transformation in Brooklyn is not uniform. There is still substantial poverty in the communities of East Williamsburg in School District 14 and in Bushwick, in School District 32. Gentrification of these poorer communities has begun as pressure for affordable housing increases. However, many students are still trapped in racially and socioeconomically isolated schools where neighborhood schools have not been affected by the demographic shifts in the community or where neighborhood schools are still in poor communities. These racially and socioeconomically isolated schools are frequently located within blocks from racially and socioeconomically diverse schools, many times in a neighboring school district. The contrast is sometimes stark.

The Superintendents of Districts 14 and 32 understand that creating racially and socioeconomically diverse schools is imperative and that this imperative calls out for a District 14/32 Interdistrict MSAP project. The project's urgency was highlighted in a March 2014 report published by the UCLA Civil Rights Project, entitled *New York State's Extreme School Segregation: Inequality, Inaction and a Damaged Future* (Kucsera & Orfield, 2014) which found that the **New York City's schools are among the most segregated schools in the country** and that segregation has grown more extreme since 2000. (Note that in a May 11, 2012 article, "A Portrait of Segregation in New York City's Schools," the New York Times called the school system the third most segregated school district in the country). **However**, **the UCLA Report indicates that magnet schools across New York City have the highest proportion of multiracial schools and the lowest proportion of segregated schools – a bright spot in an otherwise bleak desegregation landscape.** School District 14 has had magnet programs in the past and has had success. School District 32 has never had a magnet program, but believes that its schools are ready. The consortium will enable students in poor and racially isolated schools within School District 14 to attend more diverse schools. It will also enable a School District 32 school – PS 123, to attract a more racially and socioeconomically diverse student body from residents in more affluent neighboring communities in School District 14. The School District 32 student enrollment is currently 98% minority, with 85.7% of their students receiving free and reduced lunch. Although community demographics are changing in neighborhoods in School District 32 (with a growing number of nonminority residents), gentrification has not impacted the schools. Without students crossing district lines, PS 123 would have very little chance of becoming more diverse. This is the first time that students in a school in School District 32 in Bush-

wick will have the opportunity to partner with its neighboring school district (School District 14) to promote diversity.

This is an initiative that the Superintendents in both districts envision will expand as the MSAP project matures, and the magnet schools demonstrate that they are providing high quality instruction. Both districts are committed to a model for developing high quality schools that, after the MSAP project is no longer federally funded, is expected to encourage students in both districts to cross district lines, so that it becomes routine for students in Districts 14 and 32 to attend school in either district -- opening up many more choice opportunities.

Both school districts are characterized by distinct and, for the most part, racially identifiable neighborhoods in which the attendance zone schools are located. However, the enrollments in many schools have not "caught up" with the changing demographics and remain stubbornly racially and socioeconomically isolated.

***Community School Districts 14 and 32 Background*:** School District 14 consists of 40 elementary, middle, and high schools. The 2015-2016 school PreK - 8 enrollment for the district (the grades for the proposed project) is 12,903. Approximately 18 percent (18.1%) are nonminority students and 81.9% are minority students (16.5% Black; 3.4% Asian; 60.5% Hispanic; and 1.5% Other including American Indian/Alaskan Native, Native Hawaiian/Pacific Islanders, and two or more races). The percent of students receiving free and reduced lunch in the district is 59.7%. 2013 census data for Community Planning Board 1 that represents School District 14 (the communities of Williamsburg, including East Williamsburg, Greenpoint and parts of Fort Greene), indicate that 61% of the approximately 177,000 residents in the communities in which Community District 14 is located are nonminority. This represents a remarkable growth in the nonminority population from 2000, where nonminority residents represented 46% of the

population. The growth in this group is primarily in the neighborhoods of Greenpoint, Fort Greene and parts of Williamsburg. The median household income in Greenpoint in 2011 (the most recent available data) was $60,523; the median household income in Fort Greene in 2011 was $57,815; and in Williamsburg, a community with a diverse racial, ethnic and socioeconomic population, it was $35,499.

School District 32 consists of 26 elementary, middle, and high schools. The 2015-2016 PreK-8 school enrollment for the district (the grade levels for the proposed project) is 10,671. Approximately 1.7% are nonminority students and 98.3% are minority students (16.6% Black; 1.7 Asian; 79.0% Hispanic; and 1% Other including American Indian/Alaskan Native, Native Hawaiian/Pacific Islander, and two or more races). The percent of students receiving free and reduced lunch is 85.7%. These enrollments and poverty data mirror the demographics in Community Planning Board 4, which represents Bushwick, the community in which the District 32 proposed magnet school is located. According to the most recent 2013 census data, approximately 2.5% of the residents in Bushwick are nonminority, contrasted with 46% in the communities in which the District 14 schools are located. Between 2000 and 2013 there was little growth in the nonminority population, from 1.8% in 2000 to 2.5% in 2013. Similarly, the median income in Bushwick is $33,933, close to half as much as the median income in Greenpoint ($60,523) and in Fort Greene ($57,815).

PS 120, PS 196 and MS 582 in School District 14: Proposed magnet schools PS 120, PS 196, and MS 582 are located in the East Williamsburg neighborhood in Brooklyn. The neighborhood consists of many Hispanic residents from Puerto Rico and Latin American countries, as well as African-Americans. While the neighborhood has changed significantly in the last three decades, there is still an established Italian community that has resided in the community since

the 1940s. PS 120 is located within census tract 389, which according to 2015 census estimates is comprised of 16.9% nonminority residents and 83.12% minority residents (with 6.6% of those residents identifying themselves as Black, 66.9% Hispanic, 7.1% Asian, and 1.9% Other). In 2015, 45.5% of the community's residents had incomes below the poverty line. According to 2015 data, the student enrollment at PS 120, with 79.8% Hispanic students and less than 1% nonminority students, has nonminority student enrollments less than the demographics of its immediate surroundings in census tract 389, with 16.9% nonminority residents. 75.4% of students were poor, as opposed to 45.5% of the neighborhood residents. Thus, the nascent demographic changes in the community have not as yet impacted the school.

PS 196 and MS 582 are co-located in the same building which is situated within census tract 343. According to 2015 census estimates the census tract is comprised of 1.9% nonminority residents and 98.01% minority residents (with 75.0% of those residents identifying themselves as Black, 19.6% Hispanic, 1.2% Asian, and 1.2% other). In 2015, 39.3% had incomes below the poverty line. According to 2015 data, the student enrollments at PS 196 and MS 582 -- with 77.0% Hispanic students and only 2.0% nonminority students in PS 196 and 71.8% Hispanic students and only 3.3% nonminority students in MS 582 -- mirror the neighborhood demographics for nonminority residents, but have many more Hispanic students than the community at large.

PS 157 in School District 14: One of the proposed magnet schools, PS 157, is located in the Fort Greene neighborhood in Brooklyn. Known for its tree-lined streets and elegant low-rise buildings, Fort Greene is a dynamic and well-rounded Brooklyn neighborhood. It now includes a wide variety of races, ethnicities and socioeconomic classes, including a growing group of middle and upper-middle class residents, as it has become more gentrified.

PS 157 is located within census tract 1237 which according to 2015 census estimates is comprised of 78.7% nonminority residents and 21.3% minority residents (with 3.0% of those residents identifying themselves as Black, 16.4% Hispanic, .6% Asian, and 1.3% Other). In 2015, 57.44% of the residents had incomes below the poverty line. According to 2015 data, the student enrollment at PS 157, with 81.6% Hispanic students and only 1.6% nonminority students, is completely at odds with the neighborhood demographics, with 78.3% nonminority residents and 16.4% Hispanic residents. Further, 70.8% of students in the school are poor compared to 57.44% in the neighborhood residents. PS 157 is a school where neighborhood demographics have not had an impact on the school.

PS 123 in School District 32 is located in the Bushwick neighborhood of Brooklyn in Community Planning Board 4. Most residents in the neighborhood are Hispanic from Puerto Rico and the Dominican Republic, but more recent years have seen an increase in immigrants from Mexico and El Salvador. Bushwick is the largest hub of Brooklyn's Hispanic-American community. However, the neighborhood is beginning to see some demographic changes. Bushwick, particularly its industrial northwest section, has undergone demographic shifts since the mid-2000s, as artists and students priced out of places like Williamsburg and Greenpoint have joined longstanding Hispanic and African-American residents in this working class neighborhood. The artists have created an enclave where vibrant street art is rampant, and galleries, restaurants and bars have followed, lending an appeal for people in their 20s and 30s seeking the latest trends in art, music, and lifestyle.

PS 123 is located within census tract 445, which according to 2015 census estimates is comprised of 14.5% nonminority residents and 85.5% minority residents (with 2.8% of those residents identifying themselves as Black, 63.5% Hispanic, 16.1% Asian, and 3.0% other). In 2015

22.7% of the residents had incomes below the poverty line. According to 2015 data, the student enrollment at PS 123 consists of 89.9% Hispanic students and 1.3% nonminority students. Thus, the Hispanic student enrollment is higher than the community demographics and the nonminority student enrollment is somewhat lower than the demographics of the surrounding neighborhood. Further, 97.0% of students in the school are poor (i.e., receive free or reduced lunch) compared to 22.7% of neighborhood residents who have incomes below the poverty line. Thus, PS 123 students are poorer than residents in the community at large, and the school does not mirror the nascent changing demographics in the neighborhood.

Feeder (Sending) Schools: There are five feeder (sending) schools for the proposed District 14/32 magnet schools. They are PS 31, PS 34, PS 110, PS 132, and IS 577. These are schools that have larger proportions of nonminority students and are much more diverse than the proposed magnet schools. The goal is to attract students who would ordinarily attend these schools to voluntarily enroll in the project magnet schools. **All of the feeder (sending) schools are located in School District 14** in the Greenpoint and Williamsburg communities – neighborhoods that have experienced rapid gentrification and now have substantial numbers of affluent, predominantly nonminority residents**.** The feeder schools for the District 14/32 project are located in Community Planning Board 1, a community that is 61% nonminority. Each of the feeder (sending) schools has a large population of nonminority students in relation to the districtwide average (19.2% nonminority). The nonminority student enrollments at these schools are 42.2% at PS 31, 72.8% at PS 34, 64.3% at PS 110, 33.2% at PS 132 and 35.0% at IS 577.

Moreover, the feeder (sending) schools have much lower poverty rates than the magnet schools. The poverty rates for the feeder schools are: PS 31 --59.5%; PS 34 --19.5%; PS 110 --32.7%; PS 132 --35.0%; and IS 577 -- 40.1%. The poverty rates for the magnet schools are: PS

120 --75.4%; PS 123 -- 97.0%; PS 157 --70.8%; PS 196 --87.1%; and MS 582 --73.3%. **Simply put, in order to reduce minority group isolation and socioeconomic isolation in the five target magnet schools, students from more diverse and affluent neighborhoods in School District 14 need to be attracted to attend these schools. It must be noted that all five proposed magnet schools are underutilized, ranging from 51% utilization to 60% utilization. Thus, they have plenty of space to receive new students from outside their attendance zones. But there are barriers**.

Disparate Student Achievement – Magnet Schools vs Feeder (Sending) Schools: There are substantial disparities between the achievement of students in the proposed magnet schools and potential feeder (sending) schools. The following is **the percent of students at each magnet and feeder school who scored at or above proficiency on the NYS ELA exam in 2015:**

Magnet Schools **– PS 120: 9.5%; PS 157: 8.5% ; PS 196: 24.0%; MS 582: 17.4%; and PS 123: 10.9%**

Feeder (Sending) Schools **- PS 31: 58.0%; PS 34: 52.4%; PS 110: 37.3% ELA; PS 132: 52.4%; and IS 577: 42.7%.**

The disparities in student achievement highlight the work that needs to be done. The leadership of School Districts 14 and 32 believe that with the right programs, with demonstrated successes in improving student academic achievement, a more diverse student population within District 14 can be attracted to enroll in the proposed highly minority group isolated magnet school in District 32, as well as minority group isolated schools within its own district lines. **The proposed magnet schools in both districts are located in neighborhoods that are gentrifying and becoming more diverse. Thus, parents are willing to seriously consider the proposed magnet schools, all within their immediate or neighboring communities.** This was highlight-

ed in a recent article published by Amy Stuart Wells, a noted scholar in the areas of diversity and desegregation, "Why NYC Should Make Diversity a School Choice." (Wells, 2013). She wrote: "Across the country, a growing number of white, well-educated young professionals are choosing to live in cities such as New York, Chicago, and San Francisco. Although these so-called 'gentrifiers' grew up in mostly white suburbs and attended predominantly white schools, they are choosing to live in more diverse, cosmopolitan, and global communities. Related to this desire for a hipper 21st-century life style is a willingness among some of these parents to put their children in public schools. Those who are opting for public city schools note they want to prepare their children for the 'real world.' Gentrifying parents are adamant that such preparation does not occur in schools where all children come from the same backgrounds and are of the same race" (Wells, 2013). **However, the proposed schools are struggling and will not be able to attract a more diverse student population and reduce minority group and socioeconomic isolation until other barriers, primarily poor academic achievement are tackled. The time for that is now.**

***In summary*, there is an unprecedented window of opportunity for students in Districts 14 and 32. The districts are poised to mount a twin assault on desegregating their schools, both racially and socioeconomically, <u>and</u> improving student academic achievement. The two are inextricably linked.** The leadership teams in both districts are headed by innovative, forward-thinking Superintendents that have begun an exciting collaboration that they want to expand; the districts have experienced and highly effective staff to implement new instructional strategies to meet the needs of diverse student enrollments; and the districts have community partners to meet the desegregation and school improvement challenge. Further, according to the most recent 2015 NYC School Survey Reports, teachers and parents overwhelm-

ingly agree that the schools have supportive environments, effective school leadership, strong family-community ties, and high levels of trust. These are important prerequisites for successful magnet programs. And the magnet schools will build on blueprints that are in place to support students, including the NYC *Framework for Great Schools* and the NYC *STEM Framework*, as well as substantial new desegregation initiatives that are part the new Mayor's and Chancellor's focus on equity. (These frameworks will be described in detail in the *Quality of Project Design* section.) **Now is the most propitious and advantageous time for a full-scale, successful Magnet Schools Assistance Program for Districts 14 and 32**. However, fully "drilling down" at the school level to provide the extensive professional development, curriculum development, and other supports that are required to transform the schools is a costly proposition.

Costs of Implementing the Magnet Schools Program as Proposed: Districts 14 and 32 propose to implement a magnet schools program at five schools: PS 120, PS 123, PS 157, PS 196, and MS 582. The cost of implementing the magnet schools project as proposed far exceeds the district's resources. New York City school districts are operating under severe economic conditions. **The costs of implementing the proposed magnet schools project are far beyond that which can be provided by the districts. The difficulty of financing educational programs is exacerbated by the tremendous inequities that Districts 14 and 32 face in respect to state aid.** It has long been evident that, compared to other districts in New York State, New York City districts receive a disproportionately small share of the state's education budget, despite the critical needs of the city. The Campaign for Fiscal Equity's (CFE) lawsuit challenging these inequities and the constitutionality of NYS's education funding system began more than twenty years ago. The Equity Reform Project partners - Educational Priorities Panel, Foundation for Citizen Education of the League of Women Voters of NY, Urban League of NYC and

Schuyler Center for Analysis and Advocacy - lent their support to CFE's suit, creating a citizen's mandate for school finance reform. Although the CFE lawsuit was first filed in NYS Supreme Court in 1993, a final ruling was not made until 2006, when the court called for increased funding for NYC schools, a total of $1.93 billion to be phased in over a 4 year period. Further, in 2007, Gov. Eliot Spitzer pledged to phase in $7 billion in additional funding over five years, with $5.4 billion to New York City alone. However, the 2009-10 state budget froze these funding increases. And in 2011, the State Legislature's overall $1.3 billion cut in education aid brought financing levels roughly back to pre-lawsuit levels (Otterman, June 8, 2011). In reaction to the ongoing budget cuts, in November 2012, the Campaign for Fiscal Equity alerted Governor Cuomo that New York State is $5 billion behind on the 2007 financing agreement and according to CFE, "the state's underfunding of our public schools is so severe that it amounts to a violation of its constitutional obligation to provide New York's children with adequate education resources" (Hakim, November 28, 2012).

According to a 2014 report by the Alliance for Public Education, the state of New York owes school districts $4.9 billion in Foundation Aid funding, of which over $2.2 billion is owed to New York City school districts, more than other districts outside New York City and twice as much as wealthier districts. An additional $249 million is owed to New York City districts in Gap Elimination Adjustment funds to reinstate cuts to state aid dating to 2010. Despite pleas for increased funding from interested parties from across the state, including the New York Board of Regents, the NYS Association of School Business Officials, the Alliance for Quality Education, and 83 members of the NYS Assembly and Senate, the 2014-2015 budget was $1.1 billion, short of meeting the obligation outlined in CFE ruling (Marcou-O'Malley, 2014). The allocation of Foundation Aid to New York City schools, outlined in the Contract for Excellence, fell by over

$112 million from the 2009-10 to 2011-12 school years and has remained at that level through 2014-15 (NYC DOE, 2014).

Beyond state funding allocations, New York City must also accommodate continued reductions in federal funding. The NYC Title I Part A allocation in the 2014-15 school year was approximately $540 million dollars, a reduction of $24 million, or 4%, since 2013-14 and $67 million dollars, or 9%, since 2012-13 (NYSED Office of Accountability). Three of the five New York City boroughs -- Manhattan, the Bronx, and Brooklyn -- have been reduced to their hold harmless levels. According to the NYC DOE Chief Financial Officer in a June 2014 School Allocation Memorandum, New York City does not have sufficient discretionary reserves to compensate for the continued reduction in federal funding (Orlando, 2014).

Request from the Magnet Schools Assistance Program: The Districts 14/32 Consortium is requesting $3,875,000 per year from the Magnet Schools Assistance Program (MSAP) which includes the following costs in order to implement the magnet schools project for which funding is sought: a magnet director; a magnet STEM/curriculum planner; a magnet outreach and technology coordinator; magnet resource specialists to implement the unique curriculum for each of the five proposed project sites; a half-time secretary to provide clerical support; equipment and supplies directly related to the successful implementation of each school's magnet theme; contractual services for an evaluation firm to conduct an independent evaluation, including a rigorous evaluation using a quasi-experimental design; contractual services for project partners to conduct staff training for classroom teachers to implement the specialized curriculum and systemic reform initiatives at each magnet school site.

These costs are reasonable and essential in order for the districts to efficiently and effectively provide high quality educational programs to meet their desegregation goals. However,

the costs of fully implementing the magnet schools project are great and are far in excess of the $3,875,000 a year that the consortium is requesting from the Magnet Schools Assistance Program. Because of the design of the magnet project, the district will incur additional costs to implement the project fully. Therefore, at no cost to the project, Districts 14 and 32 will provide an array of resources to fully implement the program. The following is a list of the annual in-kind contributions the districts will provide

Districts' Annual In-Kind Contributions, at no cost to the project. $ 14,990,107: The NYC Department of Education and Districts 14 and 32 will provide a variety of staff who will devote all (classroom teachers) or part of their time to assist in project implementation, at no cost to the project**.** This staff includes, but is not limited to, the Community Superintendents; the Principals, Assistant Principals, Parent Coordinators, Teachers, School Psychologists, School Social Workers, special needs staff, Guidance Counselors, Family Workers, Curriculum Coaches, Paraprofessionals, and Aides (**$14,905,584).** The maintenance costs of all computer hardware and other equipment purchased with magnet school funds will be absorbed by Districts 14 and 32 (**$19,687).** The costs of office services, e.g., duplicating curriculum materials, scanning associated with the implementation of the magnet schools programs at the schools will be absorbed by Districts 14 and 32 (**$23,400**). The costs for transportation for students to go on field trips and other off-site activities **($41,436). Districts 14 and 32's total annual in-kind contribution is $14,990,107. This, in addition to the $3,875,000 requested each year from the Magnet Schools Assistance Program, brings the total annual cost of the project to $18,865,104.**

Priority 1- *Need for Assistance*. (b) The resources available to the applicant to carry out the project if funds under the program were not provided.

The costs of implementing the proposed magnet schools project enumerated above are tremendous, far beyond that which can be provided by Districts 14 and 32. The difficulty of financing educational programs is exacerbated by the tremendous inequities that the districts face in respect to state aid. As referred to earlier in the discussion, the New York City Court of Appeals has declared that the state has drastically underfunded New York City school districts over the years. And the inequities persist. New York City districts' annual per pupil expenditures continue to be lower than its surrounding suburban school districts. The massive cuts in state education aid have escalated the spending gap between poor and wealthy districts. According to an analysis conducted by the Citizens Budget Commission of New York, New York City districts spent $19,770 in total instructional and support costs per pupil in the 2010-2011 school year (the most recent available data), while suburban school districts in the adjoining counties, Nassau and Westchester, spent considerably more. As examples, Lawrence (in Nassau, which is less than 10 miles from NYC), spent $30,583 per pupil and Greenburgh (in Westchester, which is less than 15 miles from NYC), spent $32,055 per pupil, a difference of greater than $10,000 per pupil in these suburban school districts. This is typical of the disparities in per pupil expenditures between NYC districts and their surrounding suburban school districts.

Further, the project schools have large percentages of students living in poverty (as measured by students receiving free or reduced cost lunch). In the five proposed magnet schools the poverty percentages are: PS 120 – 75.4%, PS 123 – 97.0%, PS 157 – 70.8%, PS 196 – 87.1%; MS 582 – 71.3%. In addition, the schools have substantial numbers of special needs stu-

dents (students with disabilities and English Language Learners) receiving support services. Combined, the magnet schools serve 441 students with disabilities and 428 English Language Learners. These students require many more additional resources than general education students to receive an appropriate education. Clearly **Districts 14 and 32 are being asked to do more with far fewer resources than other districts in the state. The districts' monetary resources are stretched to the limit.**

Priority 1- *Need for Assistance*. (c) The extent to which the costs of the project exceed the applicant's resources

As is demonstrated by the above discussion, the actual costs of operating the magnet schools project far outweigh the amount that the District 14/32 Consortium is requesting from the Magnet Schools Assistance Program. **The district's monetary resources are stretched to the limit. As discussed above, Districts 14 and 32 lack the resources to provide more than the minimal required services to students—many with considerable needs. They certainly do not have enough resources to fully carry out the proposed magnet project without the provision of funds under the program.**

Priority 1- *Need for Assistance*. (d) The difficulty of effectively carrying out the approved plan and the project for which assistance is sought, including consideration of how the design of the magnet schools project–e.g., the type of program proposed, the location of the magnet school within the LEA–impacts on the applicant's ability to successfully carry out the approved plan successfully.

Districts 14 and 32 are proposing to provide services to address the reduction of minority group and socioeconomic isolation in their schools through an aggressive program to improve instruction and learning in the magnet schools, thereby improving academic achievement. The districts recognize that unless student achievement increases, parents will not be convinced to voluntarily enroll their children in the schools. The district will build upon structures and resources in place to build a powerful model for school improvement. As will be demonstrated throughout this proposal, **improved academic achievement, coupled with a full-scale recruitment/outreach initiative, will be the foundation for the Consortium's desegregation plan and the project's design.**

The project's theory of action (which will be described in greater detail in the *Quality of Project Design* section) is: (1) a substantial amount of high quality professional development, at least 50 hours per teacher each year focused on improvement of core subject area curriculum and instruction and another 50 hours per teacher each year of high quality professional develop- ment on the magnet theme and its integration will result in teachers developing and implement- ing quality magnet curriculum and instruction; (2) quality magnet curriculum and instruction will attract a large, diverse applicant pool of students resulting in the reduction of minority group and socioeconomic isolation; and (3) resident students, as well as students who apply and enroll, who are exposed to quality magnet curriculum and instruction that includes substantial specific magnet theme exposure, at least 10 hours per week (year 3 performance measure target), will attain higher levels of achievement than carefully matched students who do not attend magnet schools.

The special curricula/themes of the magnet schools will require extensive school-based collaboration around professional development, curriculum development, curriculum alignment and magnet theme curricula implementation. It will also require collaboration with local partners

in order to provide the authentic hands-on, real world learning experiences and service learning activities that are integral to the instructional program. **It is expensive to improve instruction at the classroom level and mount an extensive marketing initiative. That is what MSAP funding, combined with other funding sources, can and will leverage.**

As delineated above, Districts 14 and 32 will be providing $14,990,107 in-kind contributions annually to implement the magnet schools program at the five magnet schools. The costs enumerated above are crucial to the successful implementation of the magnet schools project. **The $14,990,107 annual in-kind contributions, combined with the $3,875,000 requested annually from the Magnet Schools Assistance Program, will cover the costs of the magnet schools project, thereby allowing the district to successfully carry out the approved plan.**

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

The Districts 14/32 Interdistrict Consortium magnet program is designed to engage students in authentic, real world STEM experiences and to give educators access to high-quality STEM related professional learning in order to improve student achievement. The project will have as its foundation local and regional partnerships to support STEM student learning and high-level STEM training for teachers. Districts 14 and 32 are two of New York City's 32 school districts. The central New York City Department of Education (NYC DOE) provides a blueprint for authentic STEM education through the *NYC STEM Framework*. The magnet project will use the Framework as the basis for project STEM activities. The Framework and other NYC supports are necessary preconditions to transform STEM instruction in the magnet schools, all of which are struggling and low performing. Working with local and regional partnerships,

magnet funding will provide intensive real-world STEM experiences for students and their families in formal and informal settings and intensive STEM training for teachers that would not otherwise be available, enabling the magnet schools to implement a robust STEM program in the schools.

Authentic Student Learning. The foundation of the Districts 14 and 32 magnet project is the infusion of STEM (science, technology, engineering and math) across the curriculum; and all students will have access to the rigorous and engaging STEM instruction in the schools and in informal settings outside the schools. **All schools are whole school magnet programs and all schools, regardless of theme, will integrate science, technology, mathematics, and engineering through the curriculum** in ways that draw upon the 'funds of knowledge' students bring with them to school (Gonzalez, Moll, & Amanti, 2005; Moll, Amanti, Neff, & Gonazalez, 1992). The project schools' themes are: **PS 157 – Civic Leadership in Health and Science**; **PS 120 – Architecture, Engineering and Design; MS 582 – Multimedia, Technology and Urban Planning; PS 196 – Communication and Media Arts; and PS 123 - STEAM**. Thus, there are two schools that have STEM as their school-wide focus (PS 120 and PS 123), and other schools that will incorporate STEM into their theme based curricula. Students in all magnet schools will use STEM practices including: asking questions (science) and defining problems (engineering); developing and using models (math, science, and engineering); planning and carrying out investigations; analyzing and interpreting data; using mathematics and computational thinking (technology); constructing explanations (science) and designing solutions (engineering); and obtaining, evaluating, and communicating information. Students will learn to approach problems and develop solutions like STEM professionals.

Central to the STEM instruction in all schools will be Project Based Learning (PBL). Project Based Learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge. Essential Project Design Elements include**:** Key Knowledge, Understanding, and Success Skills - The project is focused on student learning goals, including standards-based content and skills such as critical thinking/problem solving, collaboration, and self-management; Challenging Problem or Question - The project is framed by a meaningful problem to solve or a question to answer, at the appropriate level of challenge**;** Sustained Inquiry - Students engage in a rigorous, extended process of asking questions, finding resources, and applying information; Authenticity - The project features real-world context, tasks and tools, quality standards, or impact – or speaks to students' personal concerns, interests, and issues in their lives**;** Student Voice & Choice - Students make some decisions about the project, including how they work and what they create; Reflection - Students and teachers reflect on learning, the effectiveness of their inquiry and project activities, the quality of student work, obstacles and how to overcome them; Critique & Revision - Students give, receive, and use feedback to improve their process and products; and Public Product - Students make their project work public by explaining, displaying and/or presenting it to people beyond the classroom.

This approach acknowledges that all children, especially children from underserved communities, have what researchers call "funds of knowledge" they bring with them to school that are often ignored by traditional instructional methods. PBL validates children's experiences, skills, and the knowledge they bring to the learning process, by allowing students to shape their investigations. Moreover, this hands-on, experiential approach provides entry points into the curriculum for all students, including students with disabilities who form a substantial part of the

population in the proposed magnet schools. Magnet teachers will include strategies to differentiate instruction to meet the needs of all students as the STEM-focused PBL units are developed and implemented to ensure that all students have access to and develop STEM content knowledge and skills.

Local and Regional Partnerships: The proposed magnet project pays significant attention to the development of regional and local partnerships to support STEM instruction. Opportunities for STEM learning will occur through effective engagement across classroom and out-of-school settings.

NYC STEM Education Network. The NYC STEM Education Network develops strong collaborations between city agencies, youth development organizations, as well as educational and cultural institutions. It also coordinates communication with schools and partners including the STEM Educators Academy (ExpandED, 2014), which is the the STEM leg of the ExpandED Schools Network (ExpandED, 2016). It was announced (Traill, 2015) by the Network that NYC is one of twenty-seven communities selected to be part of the initial cohort of a national Community of Practice which seeks to nurture and scale effective STEM learning opportunities. The proposed magnet project will both learn from identified effective STEM projects and contribute to the knowledge base of such stragegies as the project builds model STEM programs through partnerships with community organizations, higher education, businesses, and parents.

Project-based learning (PBL) will be facilitated by the Buck Institute for Education (BIE) project partner. The Buck Institute (BIE) is a nationally renowned project based learning professional development provider. BIE will provide teacher training on how to design, assess, and manage projects that engage and motivate students across grade levels and subject are-

as. Teachers in each magnet school will receive training from Buck Institute faculty, including their PBL 101 workshops and sustained support visits. The PBL 101 workshop is Buck's three-day school-site workshop. The workshop models the PBL project process. It is a balanced blend of direct instruction, video analysis, hands on work, resource sharing, and peer collaboration and feedback. Participants are actively engaged in project design, with the expectation that every teacher or teaching team will generate a project plan that receives formative feedback from both participants and BIE faculty. BIE will also provide a minimum of 2 sustained support visits for each school, depending on the needs and schedule determined by each school. The sustained support visits provide on- site instructional coaching for participants in the workshops. After a survey of teachers in each school, BIE uses the results to develop tailored sessions to support teachers in developing PBL units and projects and implementing them in their classrooms. PBL training provided by BIE will be followed-up in classrooms by the project resource specialists in each school (coaching and mentoring), guided by the project STEM/Curriculum Planner and facilitated by STEM local partners, discussed below.

Local Partnerships: Each school will partner with a full array of local partners that will support authentic STEM learning using PBL for students and high quality training for teachers The major local STEM partnerships for all the schools are **the BEAM Center, City Technology**, **and Big Idea Week.** In addition, each school will work with local STEM partners specific to their needs and themes. These partners include the **Museum of Science in Boston** to implement their *Engineering is Elementary* program; the **New York Hall of Science** to provide MakerSpace workshops; and the New York based **Salvadori Center** for training related to its landmark bridges and buildings project. (Please see the theme description for each school in the *Quality of Project Design* section for detailed discussons of the services these partners will be

providing for project schools.) The following are descriptions of the local partners that will be providing services for all the schools.

The BEAM Center is a local partner based in Brooklyn located very close to the project schools. The Center provides STEM and design/art-based education, youth mentorship, and professional development for educators. The BEAM program uses digital fabrication and a constructivist approach to learning that is centered on project based learning. Students learn skills in welding, physical computing, carptentry, ceramics, textiles, video, programming and design as they create their STEM projects. The Center currently serves over 2,000 public school children in New York City. Training for teachers uses the research based Connected Teaching (Transforrmative, 2013) as its professional development methodology, a methodology that brings principled constructivist pedagogy together with the new technologies of the Makers Movement. The Center will bring the formal sector for students and teachers together with the community based informal sector, particularly around project based learning practices at the magnet schools, both in school and out of school.

City Technology is a collaboration between New York City public school teachers and faculty in education and engineering at the City College of New York. The project has been in existence for 25 years and has received four major grants from the National Science Foundation to support its work. Within the past five years City Technology has provided training for more than 200 New York City teachers. The project also provides STEM parent training that engages parents in learning STEM concepts through engineering design activities that they can pursue with their children at home. City Technology focuses on the built (or designed) environment, which consists of technological artifacts and systems. City Technology will provide in school

and out of school informal support for teachers and students in the magnet project, as they work on transdisciplinary, project based learning activities focusing on familiar, every day problems.

Big Idea Week is a local partner in Brooklyn that came about as a result of discussions with the community organization Business Improvement District (BID) in the DUMBO community in Brooklyn, very close to the project schools. DUMBO has had a post-industrial renaissance and tech companies have flocked to the neighborhood. The community organization (BID) asked the Big Idea Week founder if he was interested in designing an educational program that would build a bridge between its thriving business community and the local elementary school, PS 307, which had just become a magnet school. Big Idea Week is now in its third year. It began with one school in Brooklyn and now serves 1,500 students in 19 schools in Brooklyn, Queens and Manhattan and has over 80 business mentors, many of whom are in the Brooklyn Tech Triangle, described below. The program is sponsored by the Flocabulary organization. The group brings together mentors from the New York City tech and design industry to work directly with students and teachers in grades 4-8, both in school and out of school, to see real-world problems as opportunities for innovation. The program has become a model of project-based learning, connecting STEM to real world problems and teaching young students about entrepreneurship, 21st century skills and careers, and new verticals of success. Big Idea Week partners include Facebook, BioLite, Brooklyn Bridge Park, Etsy, MarkerBot, and Urban Matter, Inc., among others. The culminating activity of Big Idea week is where students, having developed products guided by tech and design industry experts, "pitch" them to the experts. The program requires weeks of prepration, with a set of materials and rubrics both for teachers and students, including a Big Idea Week School Coordinator's Guide, Big Idea School Teacher's Guide, Big Idea Student Packet, Big Idea Challenge Worksheet for Students, Student Pitch

Evaluation Rubric for Teachers, Pitch Evaluation Peer Rubric for Students, and Student Presentation Training. After their Big Idea Week presentations, students continue their work with their mentors on STEM projects, both in school and at the mentors' work sites.

The following are examples of STEM PBL projects that will take place supported by local partners, including the major partners discussed above.

PS 120 – The Magnet School of Architecture, Engineering and Design. Students will apply the Design Thinking process to predict future prototypes: *What might the next engineering careers be? How will the 21st century Wonders of the World look? What will blueprints for future landmarks look like?* To explore this new theme, students will use four dedicated, interactive spaces that currently exist in the building that intersect trends of the maker movement, learning, design thinking, and entrepreneurship. Design thinking—learning by doing—has totally revolutionized what PS 120 envisions these MakerSpaces should look like. Everything will be on wheels so things can be used rapidly. Students are on their feet. They're sitting, doing, moving. As an example, the current art room will be upgraded to become a Design Studio housing additional equipment and materials like ADOBE software to support computer-aided designs and machinery such as a laser cutter and a silkscreen printer. In the Design Studio, student architects and engineers, guided by mentors from **Big Idea Week,** will create knowledge product prototypes as authentic assessments of their core curriculum learning.

PS 123 – A STEAM Magnet School. In a second grade unit on endangered animals aligned to NYC Science Scope and Sequence, teachers will modify those lessons to become a STEAM PBL unit by partnering with the **City Technology** Program's curriculum on MechAnimations. In the STEAM Lab/ MakerSpace, students will create new collage prototypes of the endangered species, home-made kinetic toy animals with movable parts. Making things from

pegboard strips and boards, students will learn to distinguish between structures and mechanisms, and will learn how to make increasingly more complex linkages. They will develop a visual language for representing their designs and learn ways to control the direction and amount of motion. Students will relate their own designs to real world mechanisms made by others, such as nail clippers, nutcrackers, tweezers, salad tongs, pliers and toys.

PS 157 – Magnet School of Civic Leadership in Health and Science. Using the theme of "*Inventors: Cool Cogs in the Community*" as a unifying idea across the grades, the school will partner with the **BEAM Center** to pilot a multi-discipline, invention-centered program focusing on "design thinking." For instance, students will examine areas where large crowds assemble in the building, and using an industrial cutter and graphic design software, create 3-D models that re-evaluate movement patterns for better flow. Models will be presented to staff and student leaders in the Civic Convention Center, and the best design will be implemented to allow students to see real-life change as a result of their effort.

PS 196 – Magnet School of Communication and Media Arts. Teachers will explore photojournalism as a transdisciplinary school wide unit scaffolded for ELL and dual language learners and sequenced through the grades and learning levels to culminate in 5th grade as an exit project. Partnering with the **BEAM Center**, students will research school and community problems advocating as agents of change on issues important to them, like environmental stewardship and animal rights. This form of visual storytelling involves more than journalism and photography. Using the engineering design cycle process, students on each grade level will create visual artifacts, drawings, original music, storyboards and iMovies contributing to their photojournalistic portfolio. Students will understand (1) technical equipment (digital cameras and uploading laptops), (2) basic photography (wide shots, angles and close ups), (3) researching, writing out-

lines, editing and adding voice overs. Research and production will take place in the school's Media-Tech Center with collaborating community partners. A 1:1 tablet program will support student research.

MS 582 – The Magnet School of Multimedia, Technology and Urban Planning. Working with **City Technology** and **Pratt Institute,** students will identify a "design problem" in the built environment of concern to the local community, and in teams, research and develop solutions. Students will integrate and apply STEM learning in studio projects in architecture and urban design with civic motivation and action. City Technology and Pratt Institute support students' innovation where students are actively engaged in transdisciplinary learning, posing and solving problems, investigating issues and creating products.

Brooklyn Tech Triangle – Opportunities for Informal, Authentic STEM Learning

The Districts 14 and 32 magnet project is fortunate to be in the "right place at the right time." The magnet schools are located in the heart of the emerging Brooklyn Tech Triangle. This is an area located in a geographic triangle in Downtown Brooklyn, DUMBO and the Brooklyn Navy Yard. The Brooklyn Tech Triangle is now home to 1,351 innovation companies and 17,302 employees, up from 1,107 and 11,967 in 2012, respectively. Two of the project's main partners, Big Idea Week and the BEAM Center, are located in the Triangle and will capitalize on the Triangle's resources. The growth of the Brooklyn Tech Triangle was spurred by companies like Etsy (the online craft shopping site), Huge (the worldwide digital advertising agency), and MakerBot (the 3-D printer maker). The total economic impact of the Tech Triangle has also grown significantly, from $3.5 billion in 2012 to $5.3 billion in 2015. And that growth is expected to skyrocket to $15.5 billion by 2025.

The magnet schools are in the middle of the Brooklyn Tech Triangle. The schools are

within walking distance of, or a short bus ride from, Downtown Brooklyn, DUMBO and the Brooklyn Naval Yard. The multidisciplinary startups and tinkerers who work in robotics, industrial design, architecture, biotech, digital media and manufacturing will serve as mentors and role models for informal STEM learning for elementary and middle school students as they explore careers, shadow mentors and get to know 21st century entrepreneurs (makers) who represent "new manufacturing." These Triangle products range from desktop 3D printers to ballistic protective jackets; from furniture made of wood reclaimed from water towers to ergonomic baby spoons. Students can tinker in workshops and shadow designers in many of these creative startups.

Examples of informal STEM learning opportunities include Mast Chocolate Factory's community programming initiative called M.A.S.T. (Math, Art, Science, Technology), which brings grade-school students from local Brooklyn public schools into the production facility throughout the year to experience the manufacturing process. MakeBot collaborates with students on real world engineering design challenges using 3D prototypes to express their solutions and informally in job shadowing at their factory at the Navy Yard. Brooklyn Grange, a 2.5-acre organic urban farm spanning across two rooftops atop the Brooklyn Navy Yard is the world's largest rooftop soil farm growing high quality vegetables and honey for local restaurants, markets, and community-supported agriculture – a wonderful opportunity to mentor students and their families in PS 157's community garden program after school and on weekends, and to support student research on comparing various growing methods in their portable urban greenhouse at MS 582. The project's main partners (the BEAM Center, Big Idea Week and City Technology) will capitalize on these resources as they work with schools to fully develop informal, out of school STEM projects to support each school's unique curriculum. These and other out of school

informal STEM experiences for students specific to each school, both planned and established, as well as in-school STEM activities, are described in greater detail in each school's magnet theme descriptions in the *Quality of Project Design* section.

High Quality STEM Related Professional Learning: Facilitated by the project STEM/curriculum planner, the magnet resource specialists will work together with the schools' STEM PD partners, discussed above, to provide intensive and ongoing, sustained STEM PBL professional development for bilingual, ESL, special education and general education teachers. The project STEM/curriculum planner will work with each school to develop a coordinated, high-quality, school-specific STEM PD plan that meets the needs of teachers in the school.

Professional learning communities (PLCs) will be central to the STEM PD. As teachers learn STEM content and pedagogy working with the PD partners they will support each other as they develop STEM curricula and share best STEM practices. Bilingual, ESL, special education and general education teachers will serve together on school teams engaged in the alignment of instruction, curriculum, and assessment with the New York City Science Scope and Sequence. Teachers will coach one another, develop curriculum materials together, collaboratively test new STEM approaches in classrooms, and assist each other in implementing the new curriculum materials so that all students receive similarly rich STEM instruction. The magnet resource specialists, supported by the STEM/curriculum planner and PD partners, will work with classroom teachers on developing STEM tasks, lesson plans, rubrics, etc. and guide them with the "big ideas" behind STEM and appropriate essential questions as teachers develop their own curricula units. The magnet resource specialists will support school level STEM implementation through demonstration lessons, coaching and mentoring, coordinated with the STEM PD partners.

Priority 5— Supporting strategies for which there is Evidence of Promise

Citation: Bifulco, R., Cobb, C. D., & Bell, C. (2009). Can interdistrict choice boost student achievement? The case of Connecticut's interdistrict magnet school program. Educational Evaluation and Policy Analysis, 31(4), 323–345. **Rating: Meets WWC group design standards without reservations.** Reviewed using: Single Study Review Protocol.

Citation Outcomes: 1) The outcomes in the study presented and how those outcomes are statistically significant. The paper contains two components. An experimental and a quasi-experimental study. The most relevant outcome and the WWC rating relates to the experimental study which found that students who attended two interdistrict magnet schools in Connecticut had higher test scores in reading and math than students who attended non-magnet schools in the same region of the state. These results were positive and statistically significant for eighth grade students. The effect sizes were .138 for math and .278 for reading. (See p. 335 of study.)

2) How the outcomes in the evidence relate to the outcomes in your project:

The outcomes for the study were higher state test scores in mathematics and reading for students attending magnet schools when compared with similar students attending non-magnet schools. The Districts 14 and 32 Interdistrict Consortium is proposing magnet schools with the same characteristics as the study schools (please see below) serving similar populations of students and is expecting that by the end of the project period, reading (ELA) and math test scores of magnet students, on state tests, will be higher than students in non-magnet schools as determined by a quasi-experimental study.

Relevance to the Proposed Project: The experimental component of Bifulco et al., focused on two Connecticut interdistrict magnet schools operated by the Capitol Region Education

Council (CREC) in Hartford, Connecticut. The schools included in the study serve students from a city, Hartford, with high levels of racial and ethnic isolation, and its surrounding suburbs, with lower proportions of Black and Hispanic students and students who are eligible for free lunch. The New York City School Districts 14 and 32 Interdistrict project's proposed magnet schools in School District 14 and School District 32 will also draw students from schools that have lower proportions of Black and Hispanic students and students who are eligible for free lunch. These schools are in School District 14 -- a district that has larger proportions of white, middle class students than District 32. The populations of the schools in the study are similar to the population of the magnet schools in this proposal. The students in the project magnet schools in School District 14 and School District 32, like Hartford, are mainly Hispanic and African-American and serve the magnet schools' large numbers of low income students. The two CREC magnet schools in the study serve students in grades 6-8 and in grades 6-12. The statistically significant results in reading and math were for grade 8 students. The schools in this proposal serve students in grades 6-8 (one school), PreK - 8 (one school), and PreK-5 (three schools). The Districts 14 and 32 magnet schools will serve students similar to those served in the study. We believe that the study is relevant for all schools in the project (schools with elementary and middle school grades). However, it may be most directly relevant to schools with middle school grades.

The intervention, in both Hartford and the Districts 14 and 32 Interdistrict magnet program, is to implement a magnet school, as defined by Connecticut statues and regulations and the MSAP program. These programs define magnet schools in virtually the same way. The attributes of both sets of schools include: ► a special curriculum that is capable of attracting substantial numbers of students of different racial backgrounds. That means that the curriculum of the school must be unique for its city or region (e.g., for the students who are eligible to apply to the

school). ► a mandate to have racially/ethnically diverse populations than the schools that students previously attended. That usually means reducing the minority group isolation of one or more groups of students in the magnet school. ► serve students from a city and its surrounding suburbs (or in the case of the proposed project, from a school district with substantially larger proportions of white, middle class students). ► selecting students through a random lottery that does not use race as a selection factor. ► having no academic selection criteria. ► the goal is to improve students' academic achievement.

We believe that Bifulco et al., provides evidence of promise for the Districts 14 and 32 Interdistrict magnet model.

The foundation of a magnet school is its special curriculum that is capable of attracting students from different racial/ethnic backgrounds. Therefore, the logic model component that is supported by the intervention is the output Quality Magnet Curriculum, which is the special curriculum capable of attracting students from different racial and ethnic backgrounds.

As with most magnet school studies, test scores were important outcomes of Bifulco et al. They studied two schools using an experimental design and then performed a larger study (many more schools and students) using a quasi-experimental design because it was difficult to obtain carefully matched random samples for the larger number of schools. The experimental study used student selection lottery winners as the treatment group and students who applied to a school but were not selected in the lottery as the comparison group, which was not possible for the larger group of magnet schools. With that said, Bifulco et al., (2009) found that the quasi-experimental design study, which controlled for student demographics and prior achievement, and drew comparison students from the same district, produced results of comparable reliability to the experimental approach.

As evidenced in a recent, meta-analysis of five MSAP evaluations by the Center for Research on Evaluation, Standards, and Student Testing (CRESST) at UCLA, the fidelity of implementation of the proposed plan is an essential component of successful magnet schools. As such, the New York City Districts 14 and 32 Interdistrict program will utilize a robust evaluation plan, described in detail later in this proposal, to ensure that all activities are implemented as designed. Noting the methods utilized by Bifulco, et al., a quasi-experimental design that meets the What Works Clearinghouse evidence standard will be used to examine test scores of grades 3 through 8 students in the Districts 14 and 32 magnet schools. The study will be performed by the CRESST Center. Dr. Joan Herman will be the principal investigator and Dr. Jia Wang will be the co-principal investigator and project director. The UCLA team has many years of experience conducting similar studies of magnet schools (e.g., CREC-Hartford, Los Angeles), charter schools (e.g., Green Dot) and studies that were used in i3 validation and scale up grants (e.g., Literacy Design Collaborative).

The evaluation questions for this study are: 1. How did students attending the magnet schools participating in this grant perform on state tests in relation to matched students at non-magnet comparison schools in Districts 14 and 32?

2. How did different subgroups of students attending these magnet schools perform in relation to matched students at non-magnet comparison schools in Districts 14 and 32.

The expectation is that students at the magnet schools will have statistically significant higher test scores. (Please see performance measures in evaluation section.)

We believe that there is evidence of promise that students who attend the project magnet schools that serve participating students will have statistically higher test scores than similar (i.e., carefully matched) students who attend non-magnet schools in the same districts. The schools in

Bifulco et al., have similar characteristics and serve similar populations to the Districts 14 and 32 schools proposed in this application. The intervention, presenting students with a high quality magnet curriculum capable of attracting students from different racial and ethnic backgrounds, and allowing students who attend or would attend non-magnet schools to apply and enroll, is the same. The study supports the logic model component Quality Magnet Curriculum and Instruction and the Outcome higher test scores as determined by a quasi-experimental study of ELA, mathematics and science test scores.

The Notice Inviting Applications stated that up to two research studies can be identified for review for the purpose of meeting this priority. Therefore, we offer a **second citation.**

Citation: Saxe, G. B., Gearhart, M., & Nasir, N. S. (2001). Enhancing students' understanding of mathematics: A study of three contrasting approaches to professional support. Journal of Mathematics Teacher Education, 4(1), 55–79.

Rating: Meets WWC group design standards without reservations Reviewed using: WWC Procedures and Standards Handbook. Reviewed in Practice Guide: Developing Effective Fractions Instruction for Kindergarten Through 8th Grade (Released September 2010)

Citation Outcomes: 1) The outcomes in the study presented and how those outcomes are statistically significant. This study is one of 9 that Yoon, et. al., identified as evidence of the importance of professional development dosage and structure. As described below, 8 of the studies followed-up intensive workshops with in-school support for classroom teachers.

Saxe, et. al., compared the effects of three types of professional development on the teaching of two elementary school units on fractions. An intensive model (IMA) that included content, instructional methods, information about student learning and assessment was compared with professional learning communities (PLCs) (called the SUPP group in the study) and teach-

ers using "traditional methods" (defined as using textbooks and called the TRAD group in the study) who received no professional development other than brief training from the district. Student learning related to fractions was measured with instruments created for the study testing conceptual understanding and computation of fractions. (Prior to the study, teachers received two hours of professional development on how to teach the fractions units by the Los Angeles Unified School District and had already taught these units.)

The study found that the students of IMA teachers did better (statistically significant) on students' conceptual understanding of fractions than students of teachers in the other groups. The effect size was 2.39 based on data on page 68 of Saxe, et al., 2001 confirmed on page 10 of Yoon, et al., 2007.

2) <u>How the outcomes in the evidence relate to the outcomes in your project:</u>

An Institute of Education Sciences (IES), U.S. Department of Education funded research review (Yoon, et al., 2007; Yoon, Duncan, Lee, & Shapley 2008) identified nine studies (after examining more than 1,300) on the effect of teacher professional development on student achievement that met the What Works Clearinghouse evidence standards. An analysis of these studies found that "teachers who receive substantial professional development—an average of 49 hours in the nine studies—can boost their students' achievement by 21 percentile points." The studies that had 30 hours or more of professional development showed a positive and significant effect on student achievement from professional development. All nine studies focused on elementary schools and included workshops or summer institutes. Eight included follow-up sessions supporting the main professional development event illustrating the importance of follow-up activities after workshops. Even though the content of the professional development varied, the effect sizes were about the same: 0.51 for science, 0.57 for mathematics, and 0.53 for reading

and ELA. Each of the studies links intensive professional development with improved classroom teaching resulting in higher student achievement as does this project.

Saxe, et. al., was chosen because the study made clear that one of its purposes was to contribute to the professional development literature. "The present study was designed to provide bottom-line evidence of the influence of professional development programs on student learning." Fractions were chosen as the topic because of its importance in the elementary school math curriculum and the difficulties it has for students and teachers. The researchers were interested in the type of professional development that will enable greater student learning gains.

For the IMA group, there was a 5 day summer institute (approximately 35 hours) followed by 13 meetings held approximately every 2 weeks and one full day Saturday meeting (total of approximately 60 hours). The SUPP group met 9 times during the year for approximately 20 hours (estimate). The TRAD group had no professional development other than the one-shot 2 hour session provided by the district. We believe that the superior results achieved by the IMA students indicates that a professional development program that has a structure similar to IMA, shows evidence of promise. Having one-shot workshops, like the TRAD group, or one shot-workshops and PLC meetings will not be as effective as intensive and sustained professional development including job-embedded professional development support.

Relevance to the Proposed Project: This research supports the professional development activity of the logic model and the long term outcomes of increased student test scores in mathematics because professional development in these areas will be structured like IMA.

Saxe, et. al., highlights essential characteristics of professional development (PD) that should be present to have a positive impact on classroom instruction and ultimately, student achievement. The structure of the PD for this project will include workshops with follow-up in-

school coaching—by PD partners and magnet resource specialists—and teacher collaboration (intervisitations, PLCs, discussions during peer review of units). As with IMA, the focus will be on teacher knowledge of content, student learning and instructional methods.

In addition, in the WWC practice guide *Developing Effective Fractions Instruction for Kindergarten Through 8th Grade*, the Saxe study is cited several times in support of its professional development recommendations. Therefore, for teachers at PS 120, a school with low mathematics achievement, where only 31.9% of students reached proficiency on the 2015 state math assessment, a professional development program, with content and a structure similar to IMA will be developed in cooperation with Southern Cross Consultancy. Southern Cross focuses on improving student achievement in mathematics and building teacher and leader capacity utilizing CCSS Math Standards. Southern Cross will develop a professional development program for PS 120 with the goal of improving the teaching of fractions and improving student skills in this area. This professional development program will have intensity (number of hours), content and structure as close as is possible and practical to IMA. IMA was implemented in Los Angeles a school district that is similar to New York City demographically. Therefore, the population for Saxe, et al., is similar to the population for this project.

The professional development proposed for this program focused on fractions will be also be consistent with the recommendation 5 of the practice guide: Professional development programs should place a high priority on improving teachers' understanding of fractions and of how to teach them by: a) building teachers' depth of understanding of fractions and computational procedures involving fractions; b) preparing teachers to use varied pictorial and concrete representations of fractions and fraction operations; and c) developing teachers' ability to assess students' understandings and misunderstandings of fractions.

Saxe, et al., provides evidence of the influence of professional development and curriculum on grades 4 and 5 students' understandings of the concepts and computation of fractions. PS 120 is an elementary school with students in grades PreK - 5. Thus, the school includes the same grades as the population in the study.

A quasi-experimental design that meets the What Works Clearinghouse evidence standard will be used to examine test scores of grades 3 through 8 students in the Districts 14 and 32 magnet schools, including PS 120. The study will be performed by the CRESST Center. Dr. Joan Herman will be the principal investigator and Dr. Jia Wang will be the co-principal investigator and project director. The UCLA team has many years experience conducting similar studies of magnet schools (e.g., CREC-Hartford, Los Angeles), charter schools (e.g., Green Dot) and studies that were used in i3 validation and scale up grants (e.g., Literacy Design Collaborative). The evaluation questions for this study are: (1) How did students attending the magnet schools participating in this grant perform on state tests in relation to matched students at non-magnet comparison schools in Districts 14 and 32? (2) How did different subgroups attending these magnet schools perform in relation to matched students at non-magnet comparison schools in Districts 14 and 32?

As part of the study performed by the CRESST Center, they will also examine how students in grades 4 and 5 at PS 120 whose teachers receive the professional development discussed in the Saxe study perform on state tests in math in relation to matched students at non-magnet schools in Districts 14 and 32.

Yoon et al., points out that in the nine studies, including Saxe, et al., that the researchers look to see if the reform that is the focus of the professional development is being implemented in the classroom; in other words, looking at the extent of the fidelity of implementation of the

reform in classrooms. We cannot duplicate Saxe's research, but rather this project will be informed by it not only regarding the structure, dosage and content of professional development but also in terms of expecting and monitoring high fidelity of implementation for classroom curriculum and instruction (the implemented curriculum) when compared with the intended curriculum (the curriculum and instruction that is the focus of professional development).

Invitational Priority: Socioeconomic Integration

School Districts 14 and 32 have designed a magnet project to increase racial integration by taking into account socioeconomic diversity. As will be discussed in section *(a) Desegregation,* the two districts will implement an interdistrict magnet program with integration strategies that entail nonminority students with higher socioeconomic levels in District 14 to voluntarily enroll in magnet schools both in District 14 and in their neighboring district, District 32, in order to reduce minority group isolation and socioeconomic isolation in those schools. In the five proposed magnet schools, racial and socioeconomic isolation are linked. These highly minority group isolated schools also have high poverty rates. The proposed magnet project seeks to increase racial integration by taking into account socioeconomic diversity as well. The magnet schools have clear targets to reduce both minority group isolation and socioeconomic isolation. It must be noted that socioeconomic status at the schools is defined by the percent of students who receive free and reduced lunch. (Please see the *Quality of Project Evaluation* section for specific performance measure targets for reduction of minority group isolation and socioeconomic isolation for each project school.) It was determined by the two districts that an interdistrict magnet program is necessary to achieve the districts' racial and socioeconomic goals for the project

schools. Former district barriers, barriers for students from one district to enroll in schools in the other district, will be eliminated.

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

Recruitment Plan. The twin pillars of the Districts 14/32 Consortium recruitment initiative consists of: (1) providing strong educational programs in the magnet schools that will improve students' academic achievement; and (2) "getting the word out" to parents about these exciting new programs as viable choices. As indicated above, the timing is perfect for these efforts – parents are ready to consider the magnet schools and the leadership teams in the districts and schools are ready to take up the challenge. The following narrative describes the full-scale recruitment initiative that will take place and the *Quality of Project Design* section will describe the innovative instructional programs that will be implemented. Together, these initiatives will enable the districts to recruit students from different social, economic, ethnic, and racial backgrounds into the magnet schools.

Building Recruitment Teams: The Districts 14/32 recruitment team will have overall responsibility for planning, directing, and coordinating recruitment activities at the district and school levels. The recruitment teams will ensure that information about the magnet schools will be disseminated to parents from every racial and ethnic group so that they can make appropriate choices for their children. Recruitment plans will also include activities for focused recruitment that targets nonminority and middle class families in the communities in School District 14 where the feeder (sending) schools are located. The Consortium team will consist of the magnet director, the magnet outreach and technology coordinator and, at no cost to the project, the dis-

tricts' parent advocates. The team will coordinate district and school level recruitment activities. Working closely with each school's stakeholders, the recruitment team will create brochures and guidebooks and work with each school to develop a brand and design a logo. Recruitment team members will build a magnet website for each district to assist parents and students in selecting magnet schools. The magnet director and magnet outreach and technology coordinator will work with the NYC DOE's Translation and Interpretation Unit to translate all materials into the languages that are spoken by the parents in the district, at no cost to the project. Recruitment activities will be supported, at no cost to the project, by other district and NYC DOE staff (e.g., Division of Family and Community Engagement staff and staff from the Office of Informational Technology).

The school-based recruitment team will consist of the principal, the school's parent coordinator, and the magnet resource specialists, guided by the school's School Leadership Team (SLT). The team will act as recruitment coordinators for their magnet schools. Each school's SLT includes the principal, teachers and other school staff, and parents. Parents from every racial and ethnic group play important roles on this team. Also critical to the recruitment process is the Parent-Teacher Association at each school, which will actively recruit parents for the magnet schools program. Further, the districts and school recruitment teams will use the resources of the districts' parent involvement programs, including the various parent workshops conducted at the district and school levels and district parent newsletters and bulletins (electronic and print versions) to inform parents of all school activities and other recruitment events.

The Recruitment Plans: Each project year, project-wide and school-specific recruitment plans will be developed and implemented. Each plan will include clear timelines, staffing responsibilities, description of the type of activity/strategy, and target neighborhood, feeder (send-

er) schools, or parent sub-groups. The districts and school level recruitment teams will develop strategic plans that will consider such factors as an event's date and timing in relation to the school calendar, the available resources, and the lead time needed to develop materials, do effective publicity/outreach, and otherwise organize an event. Each school's recruitment plan will be coordinated with district level activities. These plans will be reviewed weekly and modified, when necessary, during the recruitment and application period to ensure their effectiveness. They will also be reviewed at the end of each school year.

Ongoing opportunities for input and feedback from all stakeholders will be built into the recruitment plans. Every six months, magnet and school staff will engage in an analysis of the recruitment strategy in terms of its strengths, weaknesses, and opportunities. Magnet and school staff will develop a logo and recruitment strategies only after carefully analyzing what would be most effective with different demographic and cultural groups and soliciting input from all stakeholders—parents, students, and staff. They will post online and begin to use a logo, recruitment video, brochure, or other marketing materials and activities only after getting feedback from a heterogeneous group of parents and other stakeholders. District 14/32 recruitment team members will, for example, develop online and print feedback forms, translated into multiple languages, to solicit this feedback. They will also create an online parent-response form, so that, as magnet staff and school personnel learn about parent insights and concerns, they can enter this information, which magnet and school staff can then use to fine-tune recruitment strategies and make them more responsive to the families of prospective students.

In addition, parent focus groups will explore not only the magnet programs to be offered, but also parents' feelings about sending their children to schools in Districts 14 and 32, the comparable values of public and private schools, including the costs, and other issues. Focus groups

will play a valuable role: both providing feedback throughout the project that will strengthen all recruitment strategies and making clear to parents even before they enroll their child that the magnet schools welcome their ideas and involvement.

The magnet director will work with the evaluator to ensure that recruitment strategies enable the program to meet its benchmarks and performance measures. The evaluator will work with the magnet director, the magnet outreach and technology coordinator and each school recruitment team to examine the successes of the magnet schools in reducing minority group isolation and socioeconomic isolation and suggest areas for improvement, including the success of the districts' and schools' recruitment plans. Schools that do not reach their recruitment goals and desegregation and socioeconomic diversity objectives will, with the assistance of the magnet director and magnet outreach and technology coordinator, either modify the plan or develop a new one.

Central Recruitment Center: The District 14/32 Consortium will have one drop-in recruitment center that will be easily accessible to all parents by public transportation. It will house the magnet outreach and technology coordinator, computers, and written materials in multiple languages about each magnet school. The center will have hard copies of all online recruitment materials, including an application form, magnet school booklets, brochures describing the magnet program at each school, and a list of common questions and answers about the magnet program and how to apply. They will learn at the center how to access the project website at home, at a public library, or elsewhere, where they can share it with other family members, including children.

The magnet outreach and technology coordinator will be supported by the districts' parent advocates and/or school parent coordinators. They will assist parents individually and in small

groups in selecting a school and completing and returning the application in a timely fashion. The magnet outreach and technology coordinator will keep individual records of parent contacts and follow-up visits with letters, emails, and telephone calls. The magnet outreach and technology coordinator will make appointments for parents to visit magnet schools and meet with the magnet staff. Magnet staff will give presentations both at the recruitment center and at community meetings. When necessary, translators will be available to make these presentations accessible to participants who speak languages other than English, and all relevant materials will be translated into the native languages appropriate for those utilizing the recruitment center.

Recruitment Training For All School Staff: The magnet outreach and technology coordinator and project director will provide training that will enable all school staff—administrative, pedagogical, secretarial, custodial, and others—and parents on the school-based recruitment team to describe the magnet program in a clear, compelling, and common way to parents, students, and other community members. Training for magnet resource specialists, each principal, administrators, and each school-based recruitment team will also enable them to train others in their school to develop a magnet school brand and a recruitment/marketing strategy. Training sessions will also prepare staff and parents to respond to the questions that parents of prospective students are likely to ask at open houses and school tours: questions, for example, about school safety, visiting the schools, the commute, contacting staff, special needs, afterschool programs, magnet themes and courses, and college and career preparation. To assist them in the recruitment process, staff and parent leaders in each magnet school will have access to the various documents and PowerPoint presentations available on the project website and described below.

District Magnet Websites: The Districts 14 and 32 magnet websites will be invaluable as a student recruitment tool. Magnet staff and district and school personnel will determine whether

to make it part of or separate from the each district's website. Links on the homepage will take parents to an overview of each magnet school, information on how to apply, frequently asked questions, magnet brochures for each school, and announcements of open houses and other upcoming events. The websites might include a virtual school tour that enables a person to watch theme-based classroom activities, or see the student work posted in the hallways. Staff, as well as parent leaders, will have their recruitment efforts supported by websites that will include, for example, information on district and school recruitment plans, branding and logo development, open house and school tour flyers, tour agendas and evaluation forms, advertisement and other banners, magnet brochures, and enrollment data. (Magnet and school staff will, for images used on the website or for any other recruitment purpose, get parents to sign releases for their children.) The magnet websites will also have top-level links from the NYC DOE's homepage.

Reaching out to the Community: Magnet staff may place on public radio stations and local TV news stations public service announcements that contain information about the magnet schools and upcoming open houses and other such events. The magnet outreach and technology coordinator may also arrange for educators and administrators from the magnet schools to be interviewed on local radio and TV talk shows and for students to be interviewed, discussing their school and its magnet themes, on those stations that specifically target school-age children, especially on public access television channels. Media will be used to create an image, develop awareness, and direct the target groups to the applications when the sign-ups start. By combining a news and public information strategy with carefully timed paid media advertising and promotional materials, the districts can stretch the project budget. Magnet staff will also send event announcements and press releases to the city's major newspapers (e.g., *New York Times*, *New York Post*, *Daily News*), the borough's community newspapers (e.g., *The Courier*, and newspa-

pers published in Spanish (e.g., *El Diario/La Prensa*), Chinese (*The World Journal*) and other languages represented in the districts. These smaller newspapers maintain wide circulation locally and are closer to the "heartbeat" of the local community than the larger papers.

Magnet staff will establish and strengthen links between magnet elementary school staff, teachers, and principals with local nursery, Head Start, and day care directors and staff. An Early Educators Fair will provide those working with pre-school children with information about the magnet elementary schools. Magnet staff will also include both pre-school educators and parent coordinators in email blasts about project events and school selection and application information, as well as regularly email them each school's newsletter. Pre-schools in Districts 14 and 32 that will be contacted include: SHRC Francis of Paola Early Learning Center, Graham Child Care Center, Marcy Child Care Center, ACE Integration Head Start, Brightside Academy – Broadway, and Bushwick United HDFC.

Magnet school fairs are powerful tools both to create initial interest and to provide the impetus for parents and students to visit schools that interest them. These fairs will have three-dimensional brochures, displays and posters and image-rich student work that describe the programs with words and pictures and model the themes and educational objectives of the various magnet schools, as well as present DVDs of each magnet school. Teachers, administrators, parents and students will be available to serve as ambassadors for the school: providing information, sharing experiences, and engaging in dialogue with parents and prospective students. Each school's table will also have flyers listing its open house dates; a prominent sign or banner that contains both the school name and its brightly colored logo; and a PowerPoint that runs in a loop with information about the school and pictures of fun, challenging student activities. Extensive

use of multimedia and video presentations at these fairs will emphasize the centrality of technology to each school.

Upon entering, parents will be asked to fill out a brief form, asking name, street and email addresses, home and cell phone numbers, and potential fields of interest, so as to facilitate follow-up email, snail mail, and phone calls. The fairs will also include specifics about the curricula and subject area content. Equally important will be the illustration in displays of potential career directions that students can take following their education in a project magnet school.

Open houses and school tours will be critical for getting parents and prospective students into the school. Both will require advance planning to increase the likelihood that those attending will get the kind of impression that will lead them to apply—and perhaps to spread the good word to friends and neighbors. Deciding on the primary message, as well as the length of the open house, will help determine which of the possible activities and events will be part of it: for instance, to provide a group tour of the building and facilities; to highlight magnet-related student work with a short performance, a presentation, or an exhibit; and to offer information about the magnet school through a brief film, a PowerPoint presentation, or a question and answer session with the principal, teachers, and students. An open house is also a good time to solicit feedback from parents on recruitment materials and their impressions of the schools. At open houses, school tours, individual school-choice counseling sessions, and other recruitment activities, magnet and school staff will request email addresses from those parents who have them and cell phone numbers from those who text. Magnet staff will follow up with personalized emails responding to questions posed by parents who agreed to such use of their email address. They will also send parents email blasts (along with U.S. mail) about upcoming events, new school selection information, and application deadlines to parents. Magnet staff will also email each school's

electronic, multi-color, and clearly branded newsletter to parents in the midst of the choice and application process and to libraries and faith-based and community-based groups.

The school-based recruitment team, in consultation with the magnet director and magnet outreach and technology coordinator, will decide questions related to school tours, such as the role of the tour guide, the route, the things to highlight, the students to talk with visitors, and the script, if one will be used. Because school tours can be tailored to the needs of a small group of parents, they can meet multiple needs, including those with very restricted schedules or those whose native language is shared by relatively few local residents.

A major advantage that Districts 14 and 32 have even before the recruitment process begins is their strong links to various and diverse ethnic/social service organizations throughout the communities. All public libraries in the Districts 14 and 32 communities will have hard copies of the resource materials found at the recruitment center. The magnet outreach and technology coordinator will educate the public library staff so that they will be more familiar with the magnet school program. Library staff will refer interested parents to the recruitment center and show them how to access, using library computers, the project website, with its wide range of recruitment information.

To enhance its image and prestige in the community, the magnet effort will include outstanding community leaders, as well as respected sports and media personalities, in community events, printed materials and public service announcements.

Many of the parents in the community have strong ties to their respective religious communities. The churches, mosques and synagogues in the neighborhood are frequently a focal point for family activities and parental interaction. These religious institutions and other faith-

based organizations will be used as critical meeting places where parents receive brochures and hand-outs and join together to discuss in focus groups the proposed magnet schools.

In addition, the proposed magnet schools will build on their existing relationships with community-based organizations such as: Brooklyn Kindergarten Society, Families First, Brooklyn Community Foundation, Mano a Mano: Mexican Culture without Borders, Haitian Family Resource Center, Caribbean American Center, Federation of Puerto Rican Organizations, Crown Heights Jewish Community Council, Muslim Community Center. The connections with these organizations and/or others will ensure that the needs of students and families are met at each of the proposed magnet schools.

(a) (2) The extent to which the applicant demonstrates how it will foster interaction among students of different social, economic, ethnic, and racial backgrounds into the magnet schools.

Districts 14 and 32 have formed an Interdistrict Consortium to reduce minority group isolation and socioeconomic isolation in five of their highly minority group and socioeconomically isolated schools (PS 120, PS 123, PS 157, PS 196, and MS 582).

Building on New York City Desegregation Initiatives The Districts 14 and 32 Interdistrict project comes at a time that is especially conducive for expanding choice. There is a new mayor – Bill de Blasio, who came into office in 2014, and a new Chancellor who was appointed by the mayor and oversees all 32 school districts in New York City – Carmen Farina. Both have long histories of dedication to equity and desegregation.

On June 14, 2015, Mayor Bill de Blasio signed into law the **School Diversity Accountability Action Act** (School, 2015), which amends the New York City administrative code, "in re-

lation to requiring the department of education to report annually on student demographics in community school districts and high schools." The Act is intended to provide a better framework and data to advance the goals of more diverse New York City schools. NYC Council Member Brad Lander, co-sponsor of the NYC School Diversity Accountability Act, stated that this new legislation will not immediately desegregate schools but it is an important first step. When signing the law, Mayor de Blasio called it "a step further in our efforts to ensure that our schools are as diverse as our city and people of all communities live, learn, and work together" (Office of the Mayor, 2015).

Perhaps the key impetus to passage of the School Diversity Accountability Act was a March 2014 report published by the UCLA Civil Rights Project, entitled *New York State's Extreme School Segregation: Inequality, Inaction and a Damaged Future,* (Kucsera & Orfield, 2014) which found that the **New York City's schools are among the most segregated schools in the country** and that segregation has grown more extreme since 2000. (Note that in a May 11, 2012 article, "A Portrait of Segregation in New York City's Schools," the New York Times called the school system the third most segregated school district in the country). **However**, **the UCLA Report indicates that magnet schools across New York City have the highest proportion of multiracial schools and the lowest proportion of segregated schools.**

Following up on the report, in December 2014, the City Council held an extensive hearing in which parents, educators, and civil rights advocates called on the city to take further steps to put NYC schools on a path toward integration as they invoked both the UCLA report and the 60th anniversary of the *Brown v. Board of Education* decision.

This same diversity imperative has been recognized by the New York State Education Department. Also in December 2014, under a **state Socioeconomic Integration Pilot Program**

announced by Board of Regents Chancellor Merryl H. Tisch and former State Education Commissioner John B. King, Jr. (currently Secretary of Education for the U.S. Department of Education), the state offered the city funding over the next three years to increase diversity at eight low-performing Priority and Focus Schools where at least 70% of students are considered poor. In total, in July 2015, the New York State Education Department awarded Socioeconomic Integration Pilot Program Grants to 20 schools across the state, of which eight are in NYC. This grant money, which comes from school-improvement money from the federal government, is intended to support programs that increase socioeconomic integration. The schools are developing magnet programs with the potential to attract higher-income students.

Following these initiatives in November 2015 the **New York City Department of Education announced a Diversity Pilot Program** to start during the 2016-2017 school, considered a significant step by the de Blasio administration toward desegregating NYC schools. Seven elementary schools will participate in this new pilot program. Under the pilot program, which grew out of recommendations that the principals of those schools made to the NYC Department of Education in 2014, poor minority students will have increased opportunities to attend schools that are racially and economically diverse within their communities. **Thus, it is recognized by the city and the state that equitable desegregation remedies must be tackled on several fronts to provide increased opportunities for poor, minority students.**

The proposed District 14 and District 32 Interdistrict Consortium is a natural extension of recent New York City and New York State initiatives to diversify schools in New York City, both racially and socioeconomically. As pointed out in the UCLA Report, magnet schools have been more successful than traditional schools in providing racially diverse environments for students.

Desegregation, however, must mean more than simply recruiting a diverse total student population. Meaningful desegregation must be a schoolwide commitment to seeking out the greatest strengths of all learners in the school's population – not only learners from different social, economic, racial and ethnic groups, but also learners of different background skills and languages, and with different ways of manifesting intelligence. The District 14 and 32 schools strive for both equity and excellence through integrated classrooms using strategies that have been proven to foster the interaction of students throughout the school day, as well as during extracurricular activities. This requires creating a sociocultural context for learning, multicultural education/cultural competence, heterogeneous grouping, and cooperative learning.

Multicultural Education/Cultural Competence: As discussed by Banks, a noted expert in the field of multicultural education, …"A major goal of multicultural education – as stated by specialists in the field – is to reform schools, colleges, and universities so that students from diverse racial, ethnic, and social-class groups will experience educational equality…There is general agreement among most scholars and researchers in multicultural education that, for it to be implemented successfully, institutional changes must be made, including changes in the curriculum; the teaching materials; teaching and learning styles (Lee, 2007); the attitudes, perceptions, and behavior of teachers and administrators; and the goals, norms, and culture of the school (Banks & Banks, 2004, 2013)" (Banks, 2016, pp. 3-4). These institutional changes will be the foundation of all magnet activities. As an example, experience in multicultural education and with diverse students are among the criteria for selecting magnet school staff, including the magnet director, magnet STEM/curriculum planner, magnet outreach and technology coordinator, and magnet resource specialists. This is reinforced by the NYC DOE's annual Diversity and

Inclusion Plan. The *2014-205 Diversity and Inclusion Annual Report* highlights various initiatives to increase cultural competence among staff including the Division of Teaching and Learning monthly trainings on *Inclusive Culture-Building*; *Everybody Matters,* an interactive training focused on defining diversity, building awareness of individual differences, and creating inclusive work environments; *Missing Link: Targeting Help for New York City's Highest Poverty Schools;* and the *Coaching for Equity Institute.* A strong emphasis upon multicultural education and cultural competence will not be new priorities for Districts 14 and 32, where they have long been hallmarks of instruction and staff training.

Teachers will receive additional training in *Culturally Responsive Systems and Culturally Competent Educators* and *English language Learner Education* from The Education Alliance at Brown University. Dr. Maria Pacheco, Executive Director of the Educational Alliance at Brown University, will provide the training. She is a noted expert in cultural competency and serving English Language Learners.

Heterogeneous Grouping: Heterogeneous grouping is an established practice in District 14 and 32 schools and will be a primary strategy for fostering interaction among students of different social, economic, ethnic, and racial backgrounds in the Magnet Schools Assistance Program. Within the classroom, children will be grouped heterogeneously, and, to the extent possible, children with special needs will be served within these classrooms, and exposed to the same challenging and fulfilling educational challenges as their peers. Researchers have found positive effects on student achievement, self-esteem, and interpersonal relationships for academically struggling students, including special needs students who are grouped heterogeneously (Villa & Thousand, 2003). The magnet program will provide all participating children with rich educational experiences designed to engage and to inspire.

Cooperative Learning: Cooperative learning is a key strategy within heterogeneous grouping to enable students of various achievement levels to maximize their potential as learners. Cooperative learning represents a range of approaches to grouping students of varying ability for instructional purposes. It has become an accepted strategy for promoting achievement across the curriculum, frequently documented to promote socialization and positive student interactions (Gillies & Ashman, 2000; Jordan & Le Matais, 1997).

The importance of cooperative learning as a 21st century skill is stressed by the creators of the Common Core standards. They were responding to the increasing recognition that the ability to work cooperatively is essential preparation for many types of work (Barron & Darling-Hammond, 2008). The ELA standards include as key features "speaking and listening: flexible communication and collaboration." The Common Core is explicit about the ways in which a standard such as "construct viable arguments and critique the reasoning of others" can be met through cooperative learning groups--in which "students in all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify of improve the arguments" (Standards for Mathematical Practice 3, 2016).

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

Districts 14 and 32 are proposing to reduce minority group and socioeconomic isolation in five highly minority group isolated schools –PS 120, PS 123, PS 157, PS 196, and MS 582, by attracting students who would ordinarily attend other schools with more diverse student popula-

tions to voluntarily enroll in the magnet schools. **The foundation of the district's desegregation plan is improved academic achievement at each magnet school that ensures equal access for all students to a rigorous, standards-based curriculum.** In particular, through the Magnet Schools Assistance Program, Districts 14 and 32 will provide student populations that have been traditionally underrepresented in courses or activities offered as part of a magnet school with high quality, research-based educational experiences designed to engage their interest, nurture their talents and inspire them to further study.

Equal Access and Treatment for Girls and Women in Math, Science, or Technology Courses: In order to ensure equal access for girls in all magnet activities, the project will incorporate gender equity issues into professional development activities that focus on content, curriculum development and pedagogy across the curriculum, including science, technology, engineering, and math (STEM), subject areas in which girls have been traditionally underrepresented. Significant progress has been made in this area, as evidenced by the fact that female students took over half of the STEM-related Advanced Placement exams in NYC in the 2013-2014 school year and that almost two-thirds of all finalists in the 2015 NYC Science and Engineering Fair were girls (Agish, 2015). This important work will be sustained and expanded upon in the proposed magnet schools.

As part of its larger gender equity focus, each magnet school will support in multiple ways girls' access to and success in challenging STEM activities. For example, schools will pay particular attention, beginning with the recruitment process, to making their programs attractive to, welcoming of, and engaging to girls. Girls' attitudes toward STEM as a class subject, as a potential area of personal or extended-day exploration, and as a future career are influenced by, among other things, the existence—or absence—of female role models who teach and enjoy

STEM, have high STEM-related expectations for female students, and/or who have made a career in one or more STEM disciplines. In order to promote greater self-efficacy in girls regarding their own science abilities, schools must provide a curriculum based in a strong conceptual framework incorporating real-world problems, as well as teachers who promote girls' scientific abilities (Baker, 2013). Subject-based magnet professional development that improves the comfort with and ability to teach STEM for the primarily female teachers at the elementary school level will support girls in developing positive attitudes toward these subjects.

In addition, all magnet school instructional staff and administrators, as well as parents and other family members, and members of the School Leadership Team, will have the opportunity to participate in gender-equity events that city, district and magnet staff will sponsor at the magnet sites. These include discussions related to research that has been conducted by: (1) Girls Incorporated (formerly Girls Clubs); (2) The Girl Scout Research Institute; and organizations of women scientists and engineers, such as the Association for Women in Mathematics and the National Research Council's Committee on Women in Science, Engineering, and Medicine.

Equal Access and Treatment for Students with Disabilities: Students with physical and learning disabilities will be included in all magnet activities. Beginning in the 2012-2013 school year, the NYC DOE began implementing its Special Education Reform initiative, titled *A Shared Path to Success,* (NYC DOE, n.d.) a set of policy changes intended: "to close the achievement gap between students with disabilities and their peers without disabilities; to provide increased access to and participation in the general education curriculum; and to empower all schools to have greater curricular, instructional, and scheduling flexibility to meet the diverse needs of students with disabilities." (Black, 2011). The implementation of a comprehensive *Response to Intervention* system provides screening methods to identify student needs and the use

of the *Universal Design for Learning* framework aids teachers in developing curricula to meet the instructional requirements of each learner. Accommodations, modifications, and integrated support services (e.g., physical therapy, speech therapy, counseling) will also be provided to students with disabilities as defined in students' Individual Education Plans.

The magnet schools will provide students identified as having learning disabilities with mandated services, while differentiating instruction to help them achieve at the same level as peers without disabilities. Teachers will develop flexible curriculum goals, materials, methods, and assessments that meet the needs of diverse learners, particularly those with disabilities. All magnet schools will provide the supports and services (e.g., accommodations, assistive technology devices) that will enable them to meet the challenge "to excel within the general education curriculum based on the Common Core Standards" (McNulty & Gloeckler, 2011, p. 4).

Equal Access and Treatment for Minority Students in Mathematics, Science, and Technology: Magnet funding will help the project schools improve STEM instruction and learning in ways that support the equal access and treatment of minority students in STEM. All magnet schools will, for instance, strengthen teachers' ability to "ramp up" the rigor of math and science instruction as they align the Common Core standards with NYC's math curricula, *Go Math!* (elementary schools) and *CMP3* (middle schools). Furthermore, in June 2015, NYC released a revised scope and sequence for elementary science education aligned to the Common Core and Next Generation Science Standards, as well as the Excellence in Environmental Education guidelines. Local partners will work to support the development of resources to implement the revised curriculum to ensure access for all students (NYC DOE, 2015).

Professional development in which equity issues are integral will support teachers in approaching STEM in the classroom and in other settings in ways that recognize and value the cul-

tural heritage of their minority students, see the connections in their lives and those of community members to STEM, and develop greater confidence in their ability to be successful in learning about STEM. Magnet teachers will use culturally-relevant instructional strategies, as well as such other effective classroom strategies with students from non-dominant racial and ethnic social groups as multimodal experiences, activities that are community-related, and role models and mentors of the same racial or ethnic background (Next, 2013). Strategies to be used include hands-on learning that focuses on inquiry, involves students in doing experiments and using manipulatives, links STEM with other subject areas, and provides opportunities to engage in STEM activities in extended-day and other informal settings. As discussed below, the project will ensure the access to STEM of ELLs, who in Districts 14 and 32 are almost entirely minorities. Please see *Priority 4 – Promoting Science, Technology, Engineering and Mathematics (STEM)* for a detailed discussion of authentic STEM activities that the project will provide for students and STEM PD for teachers.

Equal Access and Treatment for English Language Learners: English Language Learners and their families are a valuable resource to be tapped to enrich District 14's and 32's programs, especially the magnet program. A 2014 Memorandum of Understanding serves to reaffirm a shared commitment to these students by the State of New York Department of Education and New York City Schools, setting guidelines for key focus areas, including identification and placement, programs and services, parent information, staffing, and accountability (Farina & Black, 2014).

All ELLs have equal access and opportunity to participate in high quality educational programs, including transitional bilingual education programs, dual language programs, and English as a new language programs. English as new language programs provide instruction in

English with support in the students' home language so that they can learn to read, write, and speak English. Students in this program can come from many different language backgrounds, and English may be the only common language among them. Another program for ELLs is transitional bilingual education. These programs provide reading, writing, and other classes in English and in the children's home language. As students' English improves, time spent learning in English increases and time spent learning in the home language decreases. Once children are no longer identified as English Language Learners, they will exit from the program. A key initiative of the new Chancellor is dual language programs. Two of the proposed magnet schools – PS 196 and PS 123, currently have Spanish/English dual language programs, and one school, PS 157, will establish a Spanish/English dual language program in September 2016. In dual language classes in these schools, 50% of students are English Language Learners and 50% are English-proficient students. Both groups of students receive instruction in English and Spanish. The goal of the dual language program in these schools is for students to be able to read, write, and speak in both English and Spanish. In dual language classes at the magnet schools, Spanish and English are used equally.

Teachers are equipped to use best practices in English as a new language, transitional bilingual and dual language methodologies to ensure that ELLs are held to and reach rigorous standards. Teachers of ELLs, like all of their colleagues, are making the pedagogical shifts required by the Common Core standards. The magnet schools will draw on the resource materials available, including *Understanding Language*, the Stanford national initiative designed to improve ELLs' access to Common Core standards. NYC participated in the first Common Core-aligned unit of study, in conjunction with *Understanding Language*, and has benefitted from the adoption of The Key Principals for ELL Adoption, intended to aid educators in developing

coursework to support students.

Research indicates that the integration of science, for example, with "language accelerates the development of academic English, allows English learners to have equitable access to content area curriculum, and supports culturally and linguistically inclusive classrooms" (Carr, Sexton, & Lagunoff, 2007; Brown & DiRanna, 2012). Magnet staff will also draw on the effective strategies that support both language learning and science content, developed by the Next Generation Science Standards (NGSS) Diversity and Equity Group, including highlighting activities for literacy development, providing language support strategies, facilitating ELLs participation in classroom discourse, making use of students' home language, and engaging in culturally-based communication (Next, 2014). The magnet resource specialists will introduce staff to materials that help them become more *culturally responsive* and sensitive to the needs of ELLs. Teachers will learn to adapt their approaches to instruction and parent involvement to ensure the participation of traditionally underrepresented students and families.

(a) (4) The extent to which the applicant demonstrates the effectiveness of all other desegregation strategies proposed by the applicant for the elimination, reduction, or prevention of minority group isolation in elementary schools and secondary schools with substantial proportions of minority students.

Districts 14 and 32 have formed an Interdistrict Consortium as its foundational strategy to reduce both minority group isolation and socioeconomic isolation in the proposed magnet schools. This is an initiative that the Superintendents in both districts envision will expand as the MSAP project matures, and the magnet schools demonstrate that they are providing high quality instruction. Both districts are committed to a model for developing high quality schools that after

the MSAP project is no longer federally funded is expected to encourage students in both districts to cross district lines so that it becomes routine for students in Districts 14 and 32 to attend school in either district –opening up many more choice opportunities.

Selecting the proposed magnet schools, as well as their programs, came about as a result of discussions and meetings with all stakeholders in Districts 14 and 32 communities, facilitated by New York City Department of Education (NYC DOE) personnel. NYC DOE staff at all levels, including New York City Chancellor Carmen Farina, provided input on city-wide desegregation initiatives, the city's focus on opening up choice initiatives for all students, and the communities most in need. It was immediately recognized that strategies were sorely needed to provide more choices for students in District 14 and 32, and that for students in District 32, an interdistrict program was the only way to accomplish this goal. The new Mayor and Chancellor had initiated several pilot desegregation programs and sensitized communities to the strong need for change and new desegregation strategies. The Superintendents of Districts 14 and 32 responded. Both Superintendents recognized the same need and saw an interdistrict magnet program as a solution to entrenched minority group and socioeconomic isolation in their communities.

The Superintendents of Districts 14 and 32 met with principals in their districts and together established the schools that were most in need and, just as importantly, were ready; that is to say, schools that had strong leadership, had leadership and staff open to new challenges related to changing demographics in their schools, schools ready to completely revamp their educational programs, and schools where parents in both communities felt their children would be safe in supportive educational environments. A list of potential schools was completed and consensus was reached by the Superintendents and the principals for the magnet school project configuration of schools – PS 120, PS 123, PS 157, PS 196, and MS 582. The principals of the pro-

posed magnet schools then went back to their schools to work on selection of each school's theme. The schools conducted informal surveys and consulted with all school stakeholders, i.e., school staff, the School Leadership Teams, representatives from the schools' parent groups, union representatives, and community partners to select themes and design thematic programs to support the desegregative purpose of the grant.

(b) *Quality of Project Design*

(1) The manner and extent to which the magnet school program will improve student academic achievement for all students attending each magnet school program, including the manner and extent to which each magnet school program will increase student academic achievement in the instructional area or areas offered by the school.

The design of the Districts 14 and 32 Consortium magnet project has been carefully crafted by the two districts to promote racial and socioeconomic diversity and improve students' academic achievement. As described throughout this proposal, the two are inextricably linked.

Magnet School Research: Dr. Dale Ballou (2007) cites two studies (Crain, Heebner and Si 1992, 1999; Ballou, 2007) that indicate that magnet schools improve student academic achievement. (Ballou examined fourteen studies and found only four that met high design quality criteria. Of those four, the two cited above have statistically significant positive results.) Prominent studies since then (e.g., Bifulco, Cobb & Bell, 2009; Betts, 2015) yielded similar results—positive in one study and no effect in the other. (The Bifulco, Cobb & Bell study is cited in *Competitive Preference Priority 5* as evidence of promise for this project.) An important question is why significant positive results are not found more consistently. A recent, meta-analysis

of five MSAP evaluations by the CRESST Center at UCLA, suggests a factor that the literature has not adequately explored for magnet schools—fidelity of implementation. CRESST concluded that the variations in student achievement among MSAP project schools were due to the degree of fidelity of implementation which included magnet theme implementation (e.g., curriculum and professional development dosage, quality and reach and resource use), support of classroom teachers (e.g., time with coaches supporting grant activities) and professional development utility. Students attending schools with high degrees of fidelity of implementation of the magnet program and teacher support had significantly higher test scores than similar students attending nonmagnet schools in their districts. Each of the five evaluation studies met the What Works Clearinghouse evidence standards for quasi-experimental studies. (However, these individual studies were not published by their school districts.) These and other studies, including professional development studies by Yoon et.al 2007 and Yoon, 2008 discussed in section *(b)(3)* are **evidence of the project's strong theory**, and will guide the proposed magnet project to ensure the effectiveness of project implementation.

The project's **Theory of Action** is: (1) If all teachers, in each school, receive 50 hours of high quality Professional Development each year focused on Improvement of Core Subject Curricula and Instruction, and 50 hours on the Development of a Magnet Theme and its Integration into those curricula each year, then teachers will develop and implement Quality Magnet Curriculum and Instruction (a special curriculum capable of attracting substantial numbers of students of different racial and socioeconomic backgrounds). (2) If Quality Magnet Curriculum and Instruction is taught to students and becomes the core of the school's instructional program, and that is widely known by students and their families, then a large, diverse group of students will apply to a magnet school and minority group and socioeconomic isolation will be reduced. (3) If

a magnet school's students are exposed to Quality Magnet Curriculum and Instruction for 10 hours per week (project year 3 performance measure target), they will then attain higher levels of achievement than carefully matched students who do not attend a magnet school.

The project logic model, based on the theory of action, is presented in section *(b)(4) The extent to which the proposed project is supported by strong theory*. School level project models are included as an appendix. Project logic model activities include: (1) improved curriculum and instruction and student academic support; (2) magnet theme integration; (3) professional development; (4) parent activities; and (5) desegregation (student recruitment, the school application process, and selection of students).

Presented below are detailed descriptions of the logic model activities.

Improved Curriculum and Instruction and Student Academic Support

Curriculum and Instruction: Districts 14 and 32 designed this comprehensive magnet program within a context of a rare opportunity to build on a system of school improvement, based on solid research, that, under the leadership of the recently appointed Chancellor Carmen Farina, is being rolled out by the New York City Department of Education (NYC DOE). The frameworks for school improvement are in place. **However, much of the school improvement work that has taken place in New York City school districts, including Districts 14 and 32, has been at the district, borough, and city level, with, as examples, on-line city-wide curriculum libraries of units demonstrating best practices; city-wide, district-wide and borough-wide professional development institutes and workshops; and city-wide after school and summer programs for some students. Foundational frameworks and other New York City school improvement initiatives are in place. But the work of teaching and learning and how those efforts play out in classrooms, is at the heart of the matter. To truly transform the proposed mag-**

net schools that are struggling academically so they can achieve the long term outcomes of increased standardized test scores in reading, mathematics and science and reduced minority group and socioeconomic isolation, intensive and sustained work needs to be done at the school level. The magnet program at each school will provide extensive resources for intensive professional development focused on transforming instruction through the development of a rigorous, magnet theme related curriculum and a solid core curriculum that otherwise would not be available. The following is a description of NYC frameworks and supports for the proposed magnet schools that, together with the resources provided by the MSAP program, will provide a powerful magnet model.

Framework for Great Schools. The Chancellor's *Framework for Great Schools*, (Farina, 2015) is the blueprint for teaching and learning and school improvement. It provides a consistent focus and a common language for all administrators, faculty, and staff. The *Framework's* ideas about and approach to education are solidly founded in current research and widely and publicly supported by regional and national experts from the academy, the union, and politics (NYC DOE, 2015a). The cumulative research of the Consortium on Chicago School Research on school improvement informs the NYC DOE and this magnet schools project. Particularly salient is the seminal reports and follow-up book that includes the concept of the "Five Essential Supports" (Bryk, Camburn, & Louis, 1999; Bryk & Schneider, 2004; Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010) for improving academic progress.

Chicago's "Five Essential Supports" that inform student achievement - (1) Leadership, (2) Parent-Community Ties, (3) Professional Capacity, (4) Student Centered Learning, and (5) Ambitious Instruction) - are mirrored by New York City's "Six Essential Capacities" (Farina, 2015a), giving structure to the NYC DOE's *Framework*. These elements are: (1) Effective

School Leadership, (2) Strong Family-Community Ties, (3) Collaborative Teachers, (4) Supportive Environment, (5) Rigorous Instruction, and (6) Trust.

The NYC DOE goal is to move teachers from the traditional, isolated, single-disciplinary approach to a transdisciplinary model, where disciplinary content areas are aligned, integrated, and applied to real-world learning – an approach that is an integral part of the proposed magnet project's logic model for improved curriculum and instruction.

*Curriculum and the Common Core***.** Having adopted the CCSS in 2010, the New York State Education Department (NYS ED) achieved full implementation in grades K-8 in the 2013-2014 school year. The NYS DOE promotes effective use of the CCSS through a detail oriented designated online platform for teachers called *EngageNY* (NYS ED, n.d.), which provides curricula and pedagogy. It articulates mandated instructional shifts in a clear and concise set of flow-charted priorities (NYC DOE, 2015b).

In mathematics, these shifts cross all grade levels and are: focus, coherence, fluency, deep understanding, application, and dual intensity; while in English Language Arts they are: balancing information and literary texts in PK-5, knowledge in the disciplines in 6-12, text-based answers, writing from sources, a staircase of complexity, and an academic vocabulary. (NYC DOE, 2015b). The NYC DOE has worked to provide understanding by disseminating this information through the on-line Common Core Library. This library includes tasks and units for all grade levels, as well as associated annotated student work in both English/language arts and mathematics, in addition to science and history/social studies, in order to provide concrete examples of rigorous instructional practices.

*Framework for STEM Education***.** Alongside the *Framework for Great Schools'* strategic orientation of six capacities for promoting and developing academic progress that are at the heart

of this magnet project, the NYC DOE's reform initiatives also include a second framework, the new *Framework for STEM Education* (Benn, 2015) which aligns with the *Framework for Great Schools* and CCSS. The STEM framework has discrete indicators of success within four domains: (1) *School Vision and Structures for Success* -- articulates a coherent STEM vision; (2) *Curriculum, Instruction, and Assessment* – encourages a transdisciplinary approach to curriculum and instruction that promotes student-centered inquiry, problem-based learning, and teacher collaboration; (3) *Strategic Partnerships* – engages community based organization (CBOs) higher education institutions, businesses, and other external partners who offer STEM education programs; and (4) *College and Career Readiness* – prepares students for STEM post-secondary education and careers by providing equitable access to all students and provides STEM educational experiences. The criteria under each indicator describe the conditions necessary to maximize the domain's potential.

The STEM framework calls on classroom teachers to take up the charge found in *Rising Above the Gathering Storm* (Committee, 2007) and the *National Action Plan for Addressing the Critical Needs of the US STEM Education System* (National Science, 2007). These two reports recommended: (1) increasing the investment in STEM programs, (2) enhancing the STEM teaching force, and (3) enhancing the pool of students pursuing degrees and careers in STEM fields. These recommendations have been continuously echoed since that time in nationwide policy reports (Carnegie, 2009; National Conference, 2010; National Science, 2010; Gonalez & Kuenzi, 2012; Joint, 2012; White House, 2013; United, 2014; Committee, 2013; America, 2007, 2010), and have resulted in the *5-Year Strategic Plan* (Committee, 2013) and the STEM Education Act of 2015.

Central to the NYC DOE's *Framework for Great Schools* and *Framework for STEM Education* is the promotion of a an "authentic pedagogy" (Newmann, 1996, 2000; Newman, Lopez, & Bryk, 1998; Lee, Smith, & Croninger,1995; Newmann, Bryk, & Nagaoka, 2001; Rule, 2006). Authentic learning in STEM requires students to seek and communicate deeper understanding of prior knowledge to solve problems in which the cognitively challenging, academically rigorous curricular content is integrated into real-world applications emphasizing a process of disciplined inquiry that requires students to problem solve in STEM-aligned assessments with meaningful partnerships in the community. As such it will enhance the academic experience of students with a variety of learning experiences (Benn, 2015). This approach will prepare students for college, for specialized work, and for civic engagement (Newmann, 1996; Cohen, McLaughlin, & Talbert, 1993; McLaughlin & Shepard, 1995; Porter, 1994; Stevenson & Stigler, 1992).

*STEM Across the Curriculum***.** NYC DOE has benefitted from New York State's participation as one of the 26 Lead State Partners in the Next Generation Science Standards (NGSS, n.d.) development process. As a lead state partner, New York was involved in vetting the standards. Although at this time New York State has not adopted the NGSS, in anticipation of the state's adoption or a state version of it, NYC DOE developed an enhanced version of its *Science Scope and Sequence* (McNamara, 2015) that is aligned to the *NGSS Science and Engineering Practices and the Cross-Cutting Concepts.*

Based on NGSS, in addition to the traditional disciplinary domains—the physical sciences, life sciences, earth and space sciences—the NYC Science Scope and Sequence also contains practices in science and engineering. This addition is a significant departure from prior standards. In concert with the CCSS, the ELA and Mathematics Standards, which are infusing more authentic reading, writing and mathematics into science classrooms, the NYC enhanced version

of the Science Scope and Sequence signals an important focus on STEM education in New York City schools.

NYC's STEM Education efforts are further advanced by the *Statewide Strategic Plan for Scienc*e (NYS ED, 2015). This plan includes six critical components: (1) Standards, (2) Curriculum, (3) Professional Development to Enhance Instruction, (4) Assessment, (5) Materials and Resource Support, and (6) Administrative and Community Support-- each of which is further defined by a single focused goal. Objectives intended to operationalize these goals are unpacked into discrete activities to drive progress within each of the critical components. Ultimately, the plan seeks to move the state, including the NYC DOE, toward its vision to ensure the teaching and learning of science for all P-12 students by providing equitable access to exemplary teachers, science curriculum programming, instructional practices, and standards-based assessments that are reflective of research and best practices, along with quality resources and support from stakeholders at large (NYS ED, 2015). Please see a detailed description of the project's STEM activities in *Priority 4 - Promoting Science, Technology, Engineering, and Mathematics (STEM) Education.*

***Student Academic Support*:** The curriculum and instruction initiatives require student academic supports so that all students can succeed. A comprehensive system of supports, described below, will be provided to all students in the magnet schools.

Universal Design for Learning. The adoption of the CAST *Universal Design for Learning* (UDL) Framework in New York City schools, which includes a structure for educators to plan and develop instruction to meet the diverse needs of all students, provides a consistent platform through which all teachers can meaningfully apply the new standards (National Center, 2011a). UDL is a scientifically valid framework for guiding educational practice that is based on

research in neuroscience, cognitive psychology, and the learning sciences. The framework: (1) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged; and (2) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and English Language Learners. UDL begins with a philosophy that all students are capable of learning. In application, there are three levels of teaching and learning in the UDL framework: (1) Representation is the first step of the scaffold in which skills and content are presented in multiple ways. (2) Expression is the second phase of learning in which students are provided multiple ways the demonstration of their knowledge can be assessed in both formative and summative manners. (3) Engagement can occur in this third phase as students equipped with knowledge and understanding experience their world with new knowledge engaging in shared authentic experiences. As stated by the US Department of Education, research replicating findings is its basis, and "In virtually every research report on instruction or intervention, individual differences are not only evident in the results; they are prominent" (National Center, 2011).

Meeting the Needs of Struggling Students. Districts 14 and 32 are committed to the pursuit of quality instruction and know that it involves detecting, preventing, and supporting students before they fall behind. Central to the magnet project of increasing academic achievement for all students is a strong, collaborative strand of Professional Community--that between the Academic Intervention Services (AIS) and the Inquiry Team--that coordinates intervention practices. The foundation is the State mandated Response to Intervention (RtL) process. This process enacts the concrete and robust recommendations vetted by the What Works Clearinghouse (especially those with moderate and strong levels of evidence) and recommended in their *Practice*

Guides (Gersten, et al., 2009a, 2009b) which deeply inform the schools' daily practice and the magnet PD program – particularly in math and English lessons.

Given that the AIS and Inquiry Team is comprised of school-based personnel, support activities are customized to each school's population. Students who are identified to be at a greater risk of not meeting promotional criteria receive greater intensity of academic support services. Examples of AIS services and programs at the project schools include: ELA literacy programs such as *Fundations, Words Their Way, Voyager, Literacy by Design* and *Reading Recovery,* and math programs such *iReady*. Students in need also receive interventions in the affective domains that impact academic achievement, such as wellness, counseling, attendance, mediation, conflict resolution, and health counseling.

Meeting the Needs of Students with Disabilities. The magnet schools are inclusion schools. There are 441 students with disabilities at the magnet schools who will participate fully in the magnet programs. The NYS ED Committee on Special Education asserts that it is the "fundamental right of students with disabilities to not only be taught the same content (the general education curriculum) as other students, but also to be provided appropriate supports and services based on their individual needs so that they can gain knowledge and skills in what is being taught and demonstrate what they have learned" (NYS ED, 2014). NYC DOE shares this belief and has fully implemented its special education reform initiative articulated in the NYC DOE's *Family Guide to Special Education Services for School-Aged Children: A Shared Path to Success*. The document explains the policy changes intended to ensure that students with disabilities: (1) have access to a rigorous academic curriculum and are held to high academic standards, enabling them to fully realize their potential and graduate prepared for independent living, college, and careers; (2) are taught in the "least restrictive environment" that is academically ap-

propriate, and, as often as possible, alongside students without disabilities; (3) receive special education services that are targeted and provide the appropriate level of support throughout the school day; and (4) are able to attend their zoned schools or the school of their choice, while still receiving the supports they need to succeed." (NYC DOE, n.d.).

An independent objective review of the reform effort, conducted by Perry and Associates and the Fund for Public Education, has concluded that implementation to date has led to teachers holding high academic standards for both students with and without documented disabilities, an increase in planning and collaboration to differentiate instruction to ensure that the needs of all students are met, and improved student learning resulting from the use of technology to collect data, monitor student progress, and communicate with families (Perry & Associates, 2013; 2014). In accordance with these reforms, the proposed magnet schools will provide students identified as having learning disabilities with mandated services in the least restrictive environment, differentiating instruction through the *Universal Design for Learning* framework to help them achieve at the same level as their peers without disabilities. Teachers will develop flexible goals, materials, methods, and assessments that meet the needs of diverse learners, including those with disabilities. All magnet schools will provide the accommodations, modifications, and supplementary aids and services (e.g., assistive technology devices) mandated by each student's IEP to enable them "to excel within the general education curriculum based on the Common Core Standards" (McNulty & Gloeckler, 2011, p. 4).

Magnet program resources, as well as those provided by New York City's Office of Special Education Services and New York State's Office of Vocational and Educational Services for Individuals with Disabilities (VESID), will enable each magnet school to provide instruction that has been shown to be effective with children of different abilities in all content areas. The

Citywide Council on Special Education, an elected group of volunteer parents whose children are served by Individualized Education Programs, will provide advocacy for students with disabilities while continuing to advise NYC DOE on instructional policies across the district, including in the proposed magnet schools.

Meeting the Needs of English Language Learners. The NYC DOE meets the needs of ELLs in four concrete ways: (1) Milady Baez, a seasoned NYC educator experienced with leading dual language and bilingual programs, has been appointed to a new, cabinet-level position reporting directly to Chancellor Farina and leads the important work in the newly formed Office of English Language Learners and Student Support (OELLSS). (2) NYC DOE has issued the third in a series of handbooks intended to support English Language Learners (ELLs) *Language Allocation Guidelines: The LAP Handbook for ELL Programs*, (NYC DOE, 2013a). This handbook draws from federal, state, and local laws and regulations from the last forty years to ensure access and equity for all ELLs in the NYC DOE as well as from WWC recommendations regarding "Teaching Academic Content and Literacy to English Learners in Elementary and Middle School" (WWC, 2014). (3) NYC DOE has developed a *Language Allocation Policy Tool Kit*, (NYC DOE, 2013b) released concurrently with the handbook, which helps educators operationalize the guidelines in creating coherent and consistent programs for ELLs throughout the school system. (4) Finally, there is the "Memorandum of Understanding" (NYC DOE, 2014b) -- a joint publication between the City and State Departments of Education--which reaffirms the commitment to ELLs, articulates key priorities of identification and placement, explicates programs, services, and parent information and faculty accountability.

To support these city wide initiatives, the magnet schools' faculty and staff will form a Professional Community in which a commitment to meeting the needs of all students, including

ELLs is a pillar. To achieve this end, they will ensure that students are placed appropriately in general education, transitional bilingual, dual language, ENL classes, or some combination of these wherein ELLs will work with their peers in heterogeneous groups and classes, engaging in cooperative learning projects that tap their strengths and support development in all areas of need.

In order to provide appropriate supports in each of these settings, the Department of English Language Learners and Student Support has provided a comprehensive resource library, available to all teachers, that includes videos, academic units, and research on best practices to support teachers in providing meaningful instruction to English Language Learners.

***Magnet Theme Integration*.** A key strategy to support magnet theme integration will be **Project Based Learning.** Project Based Learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge. Essential Project Design Elements include**:** Key Knowledge, Understanding, and Success Skills - The project is focused on student learning goals, including standards-based content and skills such as critical thinking/problem solving, collaboration, and self-management; Challenging Problem or Question - The project is framed by a meaningful problem to solve or a question to answer, at the appropriate level of challenge**;** Sustained Inquiry - Students engage in a rigorous, extended process of asking questions, finding resources, and applying information; Authenticity - The project features real-world context, tasks and tools, quality standards, or impact – or speaks to students' personal concerns, interests, and issues in their lives**;** Student Voice & Choice - Students make some decisions about the project, including how they work and what they create; Reflection - Students and teachers reflect on learning, the effectiveness of their inquiry and project activities, the quality of

student work, obstacles and how to overcome them; Critique & Revision - Students give, receive, and use feedback to improve their process and products; and Public Product - Students make their project work public by explaining, displaying and/or presenting it to people beyond the classroom.

To manage the magnet theme integration task, teachers will receive PBL training from the **Buck Institute** and all project partners will use PBL as the foundation for their work with the schools. The schools will use the curriculum design methodology from the Buck Institute, using a unit plan template based on Buck Institute's Project Overview Template. Each school's professional learning community (PLC), guided by the magnet resource specialists and facilitated by the project STEM/curriculum planner, will develop overview curriculum maps for social studies, ELA, science, and math. Each curriculum map will include the overarching goals, concepts, essential questions, content, skills, assessments, resources and their alignment to one another and Common Core and state standards. By using the curriculum unit template based on the work of the Buck Institute, the PLC teams will create magnet themed, inquiry-based PBL units across curriculum areas that address different learning needs (including the needs of ELLs and students with disabilities), and meet the Common Core and state standards. Teachers will spiral curriculum concepts and skills for deeper student understanding, integrate Common Core literacy standards into each curriculum map, and develop rubrics and clear indicators that are likely to result in higher quality performances and products.

In addition, the professional learning community (PLC) members, guided by the magnet resource specialists and the project STEM/curriculum planner and supported by the project partners, will develop professional development modules, or workshop lesson plans, for each curriculum component for the entire staff. It is expected that each project year, the design teams will

implement themed units of study that are peer reviewed and that will result in students receiving magnet theme instruction for at least 3 (year 1), 6 (year 2) and 10 (year 3) hours per week.

***Magnet Standards*:** Building on the themed curriculum developed by the schools' PLCs, magnet school staff will develop specific magnet standards that indicate what students will know and accomplish as a result of the school's magnet theme. As a result, when parents and/or students select a magnet school they will have a strong sense of what will be expected and what they will accomplish in the magnet program. The development of specific magnet standards will be tied directly to the design and implementation of magnet curriculum and will help parents and students to know what is unique about each magnet school. Magnet standards will also be aligned with and integrated into the Common Core standards and state standards.

To create magnet standards, teachers will begin by developing performance standards for the exiting grades that reflect the knowledge and skills that are important for students to attain and that are unique to the magnet program, while also supporting the Common Core and state standards. The magnet standards will reflect the knowledge/content to be learned, the skills the student will need to know and use to create products, the performance or product and how good is good (the rubric that will be used to judge whether the student has attained the standard). The magnet standards will become part of the magnet themes, units and lessons throughout the year. The schools supported by this grant will develop exit criteria based on their magnet standards. Students will complete projects, display their portfolios or have exhibitions.

***Professional Development*.** Aligned with Bryk, et al., (2010), the NYC DOE's initiatives include a revision of the conception of PD to one of **Professional Learning – a key component of the magnet program's logic model.** "We must reimagine professional learning so we begin

to understand it as the routine work of a highly engaged group of educators who come together to better their practice and, in the process, improve outcomes for students" (Robin, 2014, p. 3).

School Level Professional Learning**.** Research confirms that meaningful professional development within professional learning communities, combined with extensive coaching and mentoring, improves student achievement (Yoon, Duncan, Lee, Scarloss & Shapley, 2007). This is a pillar of the magnet schools project. **Magnet school instructional staff will build on NYC resources available to all teachers, but will "drill down" to provide intensive support at the school level** and will include specific experiences related to the implementation of the magnet theme, including STEM infused instruction. The project's rigorous magnet PD program, using the *Great Schools Framework* as a blueprint, will provide intensive site-based and job-embedded professionalizing support to develop and implement the magnet theme. Please see section *(b)(3)* for a more detailed discussion of the project's professional development services.

Parent Activities: Please see the parent component in theme descriptions.

Desegregation: Student Recruitment, Application and Selection Activities Please see the section *(a)(1) The effectiveness of its plan to recruit students from different social, economic, ethnic and racial backgrounds into the magnet schools* and Table 5 for selection of students.

The following are theme descriptions for each magnet school.

PS 120: The Magnet School for Architecture, Engineering, and Design

Imagine kids working intensely, alone or in small, noisy groups at movable workbenches, on the floor, or anywhere -- experimenting, tinkering, failing, learning, ultimately succeeding, and celebrating when they do. This new magnet program will support student learning by creating an environment where experimentation, innovation, and inquiry rule the day, and where fail-

ure is seen not as an endpoint but rather as a momentary pause on the path to success. And while the value of time spent tinkering may not be immediately apparent to some, maker space proponents say hands-on work helps students hone their critical-thinking and problem-solving abilities while encouraging them to collaborate with peers. With those transdisciplinary competencies in their toolkit, students can more easily navigate the post secondary education network and, eventually, the workplace. Overlaying an intensified maker movement, virtual and immersive worlds, and the Internet of Things - all embedded with STEM content, skills and strategies -the school's magnet program will be delivered through Architecture, Engineering and Design.

Students will apply the Design Thinking process to predict future prototypes: *What might the next engineering careers be? How will the 21st century Wonders of the World look? What will blueprints for future landmarks look like?* To explore this new theme, students will use four dedicated, interactive spaces that currently exist in the building that intersect trends of the maker movement, learning, design thinking, and entrepreneurship. Design thinking—learning by doing—has totally revolutionized what PS 120 envisions these MakerSpaces should look like. Everything will be on wheels so things can be used rapidly. Students are on their feet. They're sitting, doing, moving. The current art room will be upgraded to become a **Design Studio** housing additional equipment and materials like ADOBE software to support computer-aided designs and machinery such as a laser cutter and a silkscreen printer. In the Design Studio, student architects and engineers will create knowledge product prototypes as authentic assessments of their core curriculum learning.

The old science room will become a **STEM Lab** where students will engage in building and design challenges to master important engineering, math and science content and technology skills using the iPad, LittleBits and BeeBot.

The current computer lab will become a **Technology Hub.** Students will navigate visual worlds, the Internet of Things and gamification. Students will enter a world based on simulation in which they are either immersed via a headset, or they are interacting with screens. It blurs the lines between what is virtual and what is real. For instance, 5th grade students studying the relationship of climate to architecture might step inside a virtual Super Storm Sandy as it occurs to be a part of the reaction that they see in 3D. Exploring the flood damage another day, they will be challenged as architects and engineers to redesign their wet school in relation to rising water levels of global warming. K-2 students learning to write computer programs using Scratch, a children's programming language developed at MIT, will design games, music and art to enjoy inside the computer generated renovated school. These computational ideas and programming techniques support transdisciplinary learning that encourages students to think creatively, reason systematically and work collaboratively.

The old library will become an **Engineering & Design Research Lab** where students will apply the engineering design cycle process through hands-on projects using 2D and 3D computer aided design software and digital fabrication tools to redesign architectural prototypes for **Skyscrapers in Our World**. Students will research architecture aligned to, and built upon grade level STEM curriculum culminating in a collaborative architecture, engineering or design product supported by the school's community partners. As examples, kindergarteners will explore "Architecture in Our Neighborhood" with the **Center for Architecture** while 5th graders will design 7 new Wonders of the World with professionals from **the BEAM Center**.

Collaborations/Partnerships: The reason why the program is centered around the MakerSpace concept is because industry leaders have said that the key to developing a generation of successful American innovators is to encourage the convergence of art, business, creativity, in-

novation, engineering, and science. In collaboration with representatives from community partners: the **BEAM Center**, the **Center for Architecture**, **EIE** and **LeAp**, teachers on each grade will develop and implement curriculum units that will culminate with an engineering design challenge. The artifacts from these design challenges will be presented to the community at large at grade level Design Showcases. At **Center for Architecture**, young people will explore architecture through design projects, field trips, and building activities during multi-day programs at the Center. **The BEAM Center** will support on site design workshops integrating architecture with engineering**. Learning Through Expanded Arts Program(LeAp)'s STEM programs** focus on building basic science concepts in students by using hands-on, activity-based instruction, and aligning all lessons and activities to the national STEM Standards. LeAp will become researcher mentors in residence in the MakerSpace STEM Lab supporting implementation of lab sciences by classroom teachers. *Engineering Is Elementary* curriculum materials integrate engineering and technology concepts and skills with grade-appropriate elementary science through hands-on design challenges that require students to apply literacy, science and math knowledge as they design, create, and improve possible solutions. Teachers will integrate these materials into the STEM Lab as well as the Engineering and Design Research Lab where appropriate.

Professional Development: All teachers will receive professional development in project based learning (PBL) through the **Buck Institute.** Working with professionals from **City Tech,** collaboration between public elementary teachers and faculty in education and engineering at the **City University of New York (CUNY)**, teachers will create exciting design challenges in architecture, engineering and design. **City Technology** has created curriculum and professional development materials that integrate science, literacy and art through a focus on engineering design. The PD will address differentiated STEM PD for teachers on all grade levels including les-

son plans that integrate writing and vocabulary for students and provide technical assistance to teachers. **Big Idea Week** entrepreneurial mentors from DUMBO startups like Facebook, MakerBot, Flocabulary and Etsy will coach and mentor teachers as they learn how to implement this exciting entrepreneurial project. The **BEAM Center** will show teachers how to use the four new maker spaces and will deliver PD in Connected Teaching, a professional development methodology that brings principled constructionist pedagogy together with the new technologies of the Makers Movement. They will develop experiences for their students, explore scientific ideas, design, and engineering processes through the construction of their own projects, and collaborate with teachers in other domains to create multidisciplinary projects that integrate knowledge. The **Museum of Science** in Boston will support teachers as they implement *Engineering is Elementary as* engineering is a new discipline for many teachers. These sessions provide teachers with an overview of engineering and technology concepts and skills, review the structure and philosophy of the EiE curriculum, engage participants in activities from the curriculum, and foster reflection about effective instructional strategies. **Southern Cross** will individualize and differentiate professional learning experiences and strategies in math based on the situational needs and priorities of the school, the teachers and the leaders. This includes developing the PD plan for the teaching of fractions aligned to the Saxe, G.B., Gearhart, M., & Nasir, N.S (2001) study, *Enhancing students' understanding of mathematics: A study of three contrasting approaches to professional support*. Informed by the school's assessment data, Southern Cross will demonstrate, model, co-teach and coach effective and explicit mathematics pedagogy for all teachers, regardless of professional stages of development in a wide variety of school contexts. **LeAp** brings professional arts educators into NYC public schools to provide customized, innovative programs in visual arts, music, dance, film, and theater that are directly integrated into the academic curricu-

lum. LeAp successfully uses the arts as a strategy to teach English language arts, math, science and social studies and addresses the varied learning styles of all students including special education. Teachers will learn to use these art strategies during PD.

Parents program: LeAp will provide parent workshops on architecture, engineering, technology and design. In LeAp's Public Art Programs, students and their parents will be able to visit with renowned visual artists to learn about their life and work. Guest artist visits take place at artists' studios, museum and gallery exhibitions, schools, and public art sites. Parents will be encouraged to volunteer in partner residencies and magnet related activities where they will learn computer programs, design thinking strategies and construction skills. Family Nights will present engineering design challenges where everyone will have a role in solving the problem.

PS 123: The Magnet School for STEAM

PS 123 will be the Magnet School for STEAM -- Science Technology, Engineering, the Arts and Mathematics. Teachers at PS 123 will guide all students in answering essential questions of deep interest, naturally integrating the study of STEM subjects and the arts with the other core content areas in classrooms and in the STEAM Lab/MakerSpace. The school will provide after school STEAM clubs using Renzulli's enrichment clusters (SEM) to offer Robotics, Digital News Media, Photography, Theater/Drama, Set Design, Dance, Lego's Mindstorm, Gardening and an expanded instrumental music program. Participation in these as well as in school STEAM activities will be documented and assessed through students' digital portfolios. Students in the Dual Language program will have extensive exposure to a second language, Spanish, and develop bilingual and biliteracy skills in both English and Spanish embedding cross-cultural understanding. As with all other students in the school, they will receive a rigorous, problem based

and project based approach to learning integrating all disciplines of STEAM with real world applications.

All students will participate in the **Big Idea Week**, one of its community partners, where mentors from local tech companies work side by side with students challenging them to solve problems as working young professionals and applying advanced content and authentic methods to develop products and services for real world audiences. As examples, the school uses *Core Knowledge* in grades K-2 and *Expeditionary Learning (EL)* in grades 3-5 for its ELA curriculum. Teachers, supported by Big Idea Week partners, will take *EL*'s 5th grade theme, Researching to Build Knowledge and Teaching Others: Inventors and Inventions, and turn it into a STEAM PBL unit. Students will work collaboratively on research of inventors that will serve as background knowledge for their real-world entrepreneurial partnership. Students will use design thinking to invent, produce and pitch a socially responsible idea like a robotic hand that can tie shoes for a classmate born without fingers. After researching the life of someone like Joseph Engleberger, inventor of the first robotic hand, students might merge the engineering design cycle with visual design principles to make a 3D prototype hand where form follows function. Students will demonstrate how the prototype works in a Shark Tank-like pitch to a panel of professionals who might manufacture it. Students will document their design process by creating a storyboard. They will also create digital portfolios and share them via the school website and the Internet for the community at large.

Another example, in a 2nd grade unit on endangered animals aligned to NYC Science Scope and Sequence, teachers will modify those lessons to become a STEAM PBL unit by partnering with the City Technology Program's curriculum on MechAnimations. In the STEAM Lab/ MakerSpace, students will create new collage prototypes of the endangered species, home-

made kinetic toy animals with movable parts. Making things from pegboard strips and boards, students will learn to distinguish between structures and mechanisms, and will learn how to make increasingly more complex linkages. They will develop a visual language for representing their designs and learn ways to control the direction and amount of motion. Students will relate their own designs to real world mechanisms made by others, such as nail clippers, nutcrackers, tweezers, salad tongs, pliers and toys.

Collaborations/Partnerships: To support its STEAM theme, the school will collaborate with **Big Idea Week**, a group of entrepreneurial mentors from DUMBO startups like Facebook, MakerBot, Flocabulary and Etsy to light the imagination of students in grades 4 and 5 and inspire them to be the next generation of makers and doers. The program teaches students to see real-world problems as opportunities for innovation; supports development of 21st century skills; creates important community connections; and instills responsibility in the tech sector. The **Technology Project**, a model for real-world design solutions offers seven engineering challenges documented through an extended curriculum that aligns with Common Core ELA and Math as well as the Next Generation Science Standards (NGSS). **Studio in the School** will support the school's visual arts curriculum using a co-teaching model in classrooms on all grade levels. In the 2nd grade unit cited above, students will make collage prototypes of their kinetic animals, and in the 5th grade unit, students will create a storyboard documenting the invention they are creating coached by **Studio** artists. Learning expeditions to the **New York Hall of Science** will provide Maker Space workshops where students and parents can design, tinker and create aligned to the maker concept in their own STEAM Lab. Building on those "hands on" experiences, the **BEAM Center** will work with parents and teachers to facilitate the integration of maker movement concepts into the STEAM/Lab to create a MakerSpace where engineering and Big Idea

challenges can be developed and executed. **MakerBot**, one of the startups in the Brooklyn Tech Triangle, will work with students and teachers as they move from 2D printing to 3D printing using computer software to create engineering prototypes like the prosthetic hand example cited in the magnet theme description. **LeAp** will provide STEM and Maker Space workshops where students and parents can design, tinker and create aligned to the maker concept in their own STEAM Lab. **Turtle Bay Music School's** musicians in residence will offer an expanded music program, a STEAM arts component, to students during the school day and beyond.

Professional development: The **Buck Institute** will train the staff in project based learning (PBL). Layering content onto that process, the **City Technology** Project, collaboration between public elementary teachers and faculty in education and engineering at the City University of New York (CUNY), has created curriculum and professional development materials designed to integrate science, literacy and art through a focus on engineering design. The project will provide differentiated STEM PD workshops to teachers on all grade levels including lesson plans and strategies that integrate writing and vocabulary for students as well as technical assistance to teachers. Teachers will broaden their pedagogical skills in the School-wide Enrichment Model (SEM) from experts at the **University of Connecticut at Storrs** to create the after school STEAM enrichment program. SEM is a research-supported model for total school improvement with the goal to provide and promote challenging high end learning experiences for all students. **Studio in the School**'s co-teaching model will mentor and coach teachers on how to integrate art into STEM to create STEAM in their classrooms. Together, teachers and artists will develop integrated interdisciplinary art lessons to support the STEAM magnet theme. Teachers will study thematic curriculum planning around maker movement concepts at the **BEAM Center** including on-site training and collaboration before project inception and in-depth post-project professional

development to allow the staff to become stronger "do it yourself" (DIY) facilitators for students. **LeAp** will work with teachers to develop integrated interdisciplinary art lessons to support the STEAM magnet theme. **MakerBot** will work with teachers to support them as they learn to use new technology so that they can teach their students how to create 3D printer prototypes.

Parent program: Reinforcing Habits of Mind, the school's climate and culture initiative, parents will participate in monthly workshops facilitated by staff developers from The Art Costa Centre for Thinking using books and activities related to specific habits being implemented in the school. The goal is to engage students, teachers and parents in making habits of mind relevant and effective in the classroom, home and workplace thus ensuring ongoing home-school connection. Currently, each class at PS 123 has a monthly Family Celebration, and the school sends home a monthly calendar. The school will expand its Parents Program by: (1) having STEAM themed Family Celebrations, days and nights to accommodate parents' work schedules, where parents and their children will work together in the STEAM Lab/MakerSpace to solve real world challenges based on the Big Idea Week; (2) inviting parents and families to become part of grade level PBL activities with City Tech and presenting their family creations in STEAM Showcases; (3) updating the school's website to include Magnet pages, STEAM resources and free or inexpensive STEM activities that can be done right at home; and (4) live-stream STEAM parent events/workshops to reach those parents unable to attend in person.

PS 157: Benjamin Franklin Magnet School for Civic Leadership in Health and Science

The Benjamin Franklin Magnet School for Civic Leadership in Health and Science will become a hub for pre-kindergarten through grade 8 innovators within the Fort Greene community. Students will learn to think like "citizen scientists," as they gather and use data to identify problems, design solutions and drive their inventions beginning in the field, exploring and un-

covering wants and needs within the community, and then collaborating to devise a range of possible solutions. Named after one of the most prolific innovators and forward-thinkers in American history, Benjamin Franklin, the school intends to broadly expose students to interlinked science, arts, and letters that would make Franklin proud. A civic leader himself, Franklin was an independent thinker who saw great needs in his community and actively worked to find solutions. These same transdisciplinary STEM concepts, strategies and skills will be embedded in all magnet theme activities. Leadership in citizen science will be explored and expressed in the Civic Convention Center (CCC), a Maker Space for both discovery and celebration. Using the theme of "*Inventors: Cool Cogs in the Community*" as a unifying idea across the grades, the school will partner with the **BEAM Center** to pilot a multi-discipline, invention-centered program focusing on "design thinking." For instance, students will examine areas where large crowds assemble in the building, and using an industrial cutter and graphic design software, create 3-D models that re-evaluate movement patterns for better flow. Models will be presented to staff and student leaders in the Civic Convention Center, and the best design will be implemented to allow students to see real-life change as a result of their effort. As future leaders, citizen scientist kindergarteners will study change and its effects like *"What Happened to All of the Polar Bears, and Why Don't We Have Any in Brooklyn*?" Fourth graders will consider disaster preparedness in their storm study, "*Hurricane Katrina vs. Superstorm Sandy: What Can They Teach Us For the Future?"* In seventh grade, citizen scientists along with their community partner, Woodhull Hospital, will examine data for sickle-cell anemia and diabetes in the communities around the Superfund Site at the Gowanus Canal, predicting future implications for health care. The eighth grade citizen scientists will examine gene dissemination in *"The Role of Genetics and Diversity in Our Community,"* studying how environmental changes and genetic engineering affect indi-

viduals. The school believes that if "we study the patterns of change, we can *become* the change for the future." In addition to documenting patterns of change in the community as citizen scientists, students will study patterns of change in the community garden while collaborating like engineers. The curriculum will be aligned with the New York City Scope and Sequence for Science and the three "cross-cutting concepts" of the Next Generation Science Standards: scientific and engineering practices, unification of common application across fields, and core ideas in the major disciplines of natural science. Students will work together on physical and life science projects in the community garden with each grade offering an area of expertise to contribute to the final product. Spanning the grades and the seasons, the community garden allows all students to experience being part of this neighborhood endeavor. In *"Put A Coat On That Spinach, It's Getting Cold!,"* kindergarteners will learn how plants respond to these environmental changes, while first graders analyze what happens to the water as it changes form under the winter frames (*"Where Did All The Water Go?: An Exploration of Evaporation, Condensation, and Precipitation"*). Fifth graders will use measurement skills, pH strips, and microscopes as they analyze the soil as part of their scientific investigation. From the beginning of the school year, in the autumn unit, *"Turn Up The Heat!: Building Winter Frames To Conserve Heat For Cold Weather Crops,"* sixth-grade students will plan the bed placements and sizes, designing them with the aid of computers, and carefully transferring these calculations to their real-world applications.

An important aspect of the magnet theme will be to develop a sense of civic leadership in students. Students will realize that just as the plants and animals in their community garden are interdependent, so, too, are people as diverse citizens of this Earth. The school will foster a sense of community responsibility that permeates through the walls of their historic school, past the boundaries of their neighborhood, and into the vast lands that extend beyond. Students will use

technology to connect to this outside world, and with intelligence and empathy, step into that world, striving to make it a better place: environmentally, structurally, and holistically through engineering challenges with the **BEAM Center**, a community partner. With **City Technology**, preschoolers and first graders will investigate Mech-a-Blocks**,** reconfigurable mechanical building blocks. Unlike ordinary blocks, children can use Mech-a-Blocks to create mechanisms as well as structures. The unit introduces mechanical concepts to young children. Through the mechanical devices they design and build, they learn about structures and mechanisms, inputs and outputs, levers, direction and amount of motion. Then first grade engineers will build their own windmills as part of their weather unit, to show how systems in the natural and designed world can work together. In third and fourth grades, the students will use LittleBits to explore the workings of electronics, sound, and motion. Seventh graders will practice coding with Bootstrap, using algebraic formulas to create video games that will encourage good health practices. Eighth graders, studying Newton's Law, will design vehicles made of different materials, and test them in varying situations involving motion and force, for energy-efficiency and quality of life benefits, *"Straight Up, and In Proportion: Act and React with Newton's Law in Mind"*.

Collaborations/Partnerships: Partners from Woodhull Hospital mentor students in career opportunities in the sciences. Through a partnership with Health and Hills, a nearby nursing home, students will experience first-hand an elderly person's vision impairment and its real-world solution, Benjamin Franklin's invention of bifocals. Midori Violin Program and Inside Broadway, a theatrical arts and technology program, both offer opportunities for hands-on linkage with third and fourth grade LittleBits science units on sound energy. Brooklyn College Geology Club will provide college mentors for students in grades 7 and 8. The most extensive collaboration will be with The **BEAM Center.** Their process develops the concepts of science, de-

sign, arts and engineering in an unorthodox way with the goal of making them more inclusive for diverse populations. To support its magnet theme development of 21st century skills, the school will collaborate wit**h Big Idea Week**, a group of entrepreneurial mentors from DUMBO tech companies like Facebook, MakerBot, Flocabulary and Etsy to teach its student scientists to take those real-world problems they have observed as opportunities for innovation while creating important community connections. The school will have formal classroom residencies and field trips as well as informal STEM learning after school with the **Prospect Park Zoo** and **Brooklyn Botanical Garden**.

Professional Development: All teachers will receive professional development in project based learning (PBL) through the **Buck Institute.** Working with professionals from **City Technology,** teachers will create exciting STEM units like **EnerJeeps,** supporting the eighth grade unit on Newton's Law, developing concepts of energy and electricity through design, building and testing of miniature electric cars. Teachers will be able to facilitate students in connecting motors to batteries, and then to control these circuits with homemade switches. In the CCC maker space, students will be able to design, make and test simple cars that can be powered by gravity or pushing, and roll freely enough to overcome friction. Finally, they add motors to their cars and develop a drive system that uses a motor to make the car go.

Teachers will receive professional development in design thinking and thematic curriculum planning from the **BEAM Center** including on-site training and collaboration before project inception and in-depth post-project professional development to allow the staff to become stronger project designers and facilitators. In classrooms with students, teachers and parents, artists and makers teach the integration of technology into non-typical domains such as history and English like using AutoDesk to show how Pilgrims would have designed sturdier homes and typ-

ical STEM domains like math and physics developing blueprints before building bridges. **Big Idea Week** will provide PD for teachers on entrepreneurial strategies including how to facilitate the big pitch.

Parents program: Parents will be active members of the Benjamin Franklin Magnet School for Civic Leadership in Health and Science community and will have opportunities to become citizen scientists as they work alongside their children throughout the year as active participants in research projects, student-created newsletters, the community garden and executing engineering challenges, and they will become the audience for STEM-based video sequences designed, filmed, and edited by their children.

PS 196: The Magnet School of Communication and Media Arts

The PS 196 Magnet School of Communication and Media Arts will be a STEAM (science, technology, engineering, art and math) driven family community of learners that uses project-based learning as a major vehicle for increasing student and parental engagement and communicative abilities. The Community School's Technology and Media Lab Center, a gathering place for making and doing, will enhance the development of a multilingual student body through the seamless inclusion of dual language learning throughout the school and all facets of STEAM. PS 196 is uniquely positioned, as a school in the rapidly changing neighborhood of Williamsburg, to teach students about what it means to lead in times of change. Students' work will help to engage and empower the Williamsburg community, and in doing so they will learn how communication can create positive social change. Through drama, video, audio, and photojournalism, students will gain an awareness of the media's power to influence, and they will understand how an audience perceives media messages. They will use mixed media to share their

work and adapt it for a diverse audience. Through inquiry, innovation, and critical thinking, students will become invested in their community and be empowered to shape it even as change wrought by gentrification challenges their community. They will be able to self-identify concerns in the community and work to develop potential solutions. Students will live the experience of being creators and producers of media art, not merely observing it. They will prepare productions for diverse audiences and be prepared to share and disseminate their work in the broader community.

The magnet theme will have as its foundation the *NYC Blue Print for the Arts: Moving Image (Television and Broadcasting*) along with *NYC Blueprint for Teaching and Learning in the Arts*, which supports transdisciplinary media connections for thematic unit development. STEAM concepts, strategies and skills will be embedded into all of these. Going beyond words in a textbook and stepping outside the classroom to access the cultural and community learning resources, students will develop their own STEAM enrichment clusters using the Renzulli Learning School-Wide Enrichment Model (SEM). Applying the engineering design cycle- ask, imagine, plan, create and improve- and project based learning (PBL), students will become writers and reporters producing op ed television newscasts or filmmakers specializing in global warming documentaries and animated career sitcom series. Budding coders and app developers will be able to take a discrete "Google" technology and engineering class to explore the science behind web design, app development and mobile technology. Young actors, singers, dancers, costume and set designers or stage and sound directors will be able to collaborate on multimedia theatrical performances either in enrichment clusters or a discrete class in musical theater. All performances, live and recorded, will be broadcast and archived on The News Network and PS 196's website. Teachers will explore photojournalism as a transdisciplinary school wide unit

scaffolded for ELL and dual language learners and sequenced through the grades and learning levels to culminate in 5th grade as an exit project. Students will research school and community problems advocating as agents of change on issues important to them like environmental stewardship and animal rights. This form of visual storytelling involves more than journalism and photography. Using the engineering design cycle process, students on each grade level will create visual artifacts, drawings, original music, storyboards and iMovies contributing to their photojournalistic portfolio. Students will learn: (1) how to use technical equipment (digital cameras and uploading laptops), (2) basic photography (wide shots, angles and close ups), (3) researching, writing outlines, editing and adding voice overs. Research and production will take place in the school's Media-Tech Center with community partners. A 1:1 tablet program will support student research. Building on a strong commitment to technology, the school's offerings will create a culture of dual language, mobile friendly access for students and the community.

Collaborations/Partnerships: **The Paley Media Center** will collaborate with students and teachers on a variety of multimedia projects. K-2 students will learn how moving images differ from still images, how to shoot simple video images and how to do simple edits and post-production techniques. They will work together on a poem with sound, movement, visuals and words. Exploring commercials with **the Paley Media Center**, 3rd graders will learn how advertisers appeal to audiences; persuasion techniques used in television commercials; to deconstruct visual, sounds and words in commercials aimed at their age group. Students will incorporate writing and storyboarding to produce a 30-second infomercial. **Google's Educators Program** will support a discrete class for computer science and engineering for students to explore the world of technology in a nontraditional setting for an elementary school. The course will include coding and app development. **City Technology** will introduce paper pop-up mechanisms as a

basis for learning science, engineering and math. Students have prior knowledge with pop up read alouds in lower grades. Pop-up books are three-dimensional linkages made from heavy paper or card stock. These materials develop spatial visualization, measurement of angles and distances, data analysis, concepts of symmetry and motion, systems thinking, design and troubleshooting. Working with **Paley Media Center,** students will incorporate photojournalism into the books. To support its magnet theme development of 21st century skills, the school will collaborate with **Big Idea Week.** Starting with a kick-off presentation where mentors introduce themselves, their careers and, of course, their Big Ideas, students break into small groups to discover the creative process—using transdisciplinary learning to identify school or community problems important to them and bring the solution to life through brainstorming, creative collaboration and product design. Culminating the week, students pitch their Big Ideas to mentors, guests and classmates in a mini Shark Tank simulation. The school will partner with the **Salvadori Center** to explore two thematic social studies strands: People, Places, and Environments – The complex relationship between human beings and the environments within which they live and work, and Science, Technology, and Society – The significance of scientific discovery and technological change on people, the environment, and other systems and with **SONY** for mentorships and career exploration. **Polytechnic School of Engineering,** located within the Brooklyn Tech Triangle, will collaborate with teachings on exciting "hands on" STEM concepts through creative projects and experiments. **LEGO Education** will be used by teachers and students to make science, technology, engineering, mathematics and coding come to life through a unique combination of classroom-friendly software materials and engaging, standards-based STEM projects.

Professional Development: Staff will receive professional development in new technology through the **Google Educators Program** to facilitate student use of Google tools available

to them in the school's new Community Technology and Media Lab. Monthly PD sessions will be provided by Google through workshops both in the school's lab and at Google's Manhattan center. In Creating Video News with **The Paley Media Center**, teachers will learn how news is constructed, how decisions are made in gathering and producing news, how news differs in visual, textual and sound form and collaborate on producing a video news story. Teachers will take on different roles of a newscast team and will apply these skills regularly in the classroom, creating projects that incorporate video differentiating and modifying instruction across all subjects. Teachers will be introduced to the fundamentals of documentary filmmaking. They will learn how to research and plan a project, how to handle the camera and audio on a set and in a studio. All teachers will receive professional development in project based learning (PBL) through the **Buck Institute.** Working with professionals from **City Technology,** teachers will learn paper pop-up mechanisms as a device for teaching science, engineering and math concepts of symmetry and motion that support the development of spatial visualization, measurement of angles and distances and data analysis. Teachers at PS 196 will receive professional development in design thinking and thematic curriculum planning from the **BEAM Center** including on-site training and collaboration before project inception and in-depth post-project professional development to allow the staff to become stronger multimedia project designers and facilitators. The **Salvadori Center**, a well-respected, research-based program, will conduct monthly PD sessions related to its New York landmark bridges and buildings project. The school will collaborate with **Creative School Services** to customize and model lessons, provide support in planning for differentiation, help inquiry groups operate and help implement systemic reforms using the Framework for Great Schools. **Polytechnic School of Engineering** will offer teachers PD on their "hands on" STEM concepts to use in the classroom, and **LEGO Education** will

provide teachers with training in how to use its program materials.

Parents program: As a Community Learning School, there is a full-time resource coordinator housed at PS 196, who builds on relationships with community organizations to gather resources and services to benefit the school. Parents will have access to dual language classes and computer programs hosted in the new Community Technology and Media Lab/Media- Tech Center, available to the community at large. Technology skills of both students in school as well as their parents through workshops will have a profound effect on the home-school connection as it will allow parents to partner with the school and participate with their children on relevant projects. Parents will understand the process of a rigorous and relevant education as they become "magnet parents" stepping into the 21st century digital world alongside their children.

MS 582: The Magnet School for Multimedia, Technology, and Urban Planning

MS 582, the Magnet School for Multimedia, Technology, and Urban Planning, will offer all students a rigorous academic experience across content areas grounded in UNESCO's Four Pillars for the 21st Century. Students will graduate with a digital portfolio of projects that include performance based assessments, academic unit projects, community projects, photographs, video clips, writing pieces and reflection essays. The digital portfolios will demonstrate students' accomplishments and skills in the magnet theme across academic domains. Students will engage in environmental hands-on projects building on the multimedia skills of students in PS 196, the elementary school that shares their building and is a feeder school for them. As an example of the school's integrated theme, 6th grade students will explore the real-world problem and challenge of designing an urban school garden applying technology to access "School Garden Wizard" via the Internet. In self-directed learning, students will follow directions implementing a

series of online steps leading them to successfully grow fresh salad and colorful flowers. The school will offer several discrete courses like service learning for 6th and 7th graders who will help a neighborhood nursing home by bringing them the produce of the urban garden. 7th graders will learn computer coding to develop and support the school's new website that will include albums of students' real world solutions to urban problems, and 8th graders will acquire the skills needed for model construction in the Woodworking Shop. These courses and others are central to the argument of the Four Pillars for the 21st Century: if education is to succeed in its tasks, curriculum as its core should be restructured or repackaged around the four pillars of learning*:* *learning to know* (process of discovery), *learning to do* (ability to communicate effectively with others); *learning to live together* (knowledge and understanding of diversity and interdependence of self and others,); and *learning to be* (imagination, creativity and universally shared human values). The Four Pillars and the content, strategies and skills of STEM are embedded into all facets of the magnet theme. Students will use design thinking in urban planning and digital tools to construct city models collaborating with community partners like the **BEAM Center** and **Pratt Institute**. They will conduct surveys of community needs and address urban environmental issues by making observations, taking notes, structuring surveys that ask key questions, interpreting data and constructing action plans based on the key concepts gathered. Partnering with the **Salvadori** Center, students will use AutoDesk and AutoCAD technology to create blueprints to guide their bridge building. Referencing city building codes and zoning regulations online, students will apply basic model-making, design and construction skills to develop their own neighborhood plans. Incorporating trigonometry principles and equations into their digital blueprints, students will join the model neighborhoods to create a miniature city linked by the bridges. The design studio for student making will consist of a state of the art Fabrication Lab/ Mak-

erSpace with wall mounted interactive SMART board, computers, lap tops, IPAD carts and a 21st Century Laser Cutter. The transdisciplinary competencies in merging the Four Pillars with STEM are: collecting, selecting, processing and managing information; mastering instruments of knowing and understanding, and effectively communicating with others; adapting to changes in life situations; and cooperatively and collaboratively working in teams. The school provides Expanded Learning Time (ELT), additional support in the core academic subject areas, at no cost to the project through a 21st Century Community Learning Center (21CCLC) grant. 21CCLC offers students a variety of youth development and enrichment activities throughout the school day and beyond focusing on College and Career Readiness.

Collaborations/Partnerships: Contributing to the technology component of the school's magnet theme, supported by **City Technology,** teachers will demystify computers for students in a unit, Computers Unwrapped**,** by hands-on explorations of circuits, controls, codes and computer arithmetic with them. 7th grade students will be provided with an introduction to circuit operations and strategies used in computers for data storage and communication to support their discrete coding class. Students will be able to create simple circuits that perform logic, learn the binary number system and create circuits that can add numbers in binary focusing on codes, data storage and communication. **The Salvadori Center** will collaborate on extensive and engaging studies of New York's landmarks as they relate to past and present urban planning. Students will apply relevant math, engineering, and science skills and strategies as they invent urban plans and landmarks of the future. Working with **Pratt**, a living lab of craft and culture located in the historic Clinton Hill neighborhood of Brooklyn adjacent to the emerging Brooklyn Tech Triangle, and **Big Idea Week,** a group of entrepreneurial mentors from DUMBO startups, students will be able to: identify a "design problem" in the built environment of concern to the local community,

and in teams, research and develop solutions. Students will integrate and apply STEM learning in studio projects in architecture and urban design with civic motivation and action. Both Pratt and Big Idea Week support students' innovation and entrepreneurship where students are actively engaged in transdisciplinary learning, posing and solving problems, investigating issues and creating products.

Professional Development: Teachers will receive PD from the ***Leader In Me* Foundation** in the implementation of **UNESCO**'s Four Pillars for educators to emphasize in the 21st Century. This will include how to model and coach the real-world skills and competencies of collecting, selecting, processing and managing information; mastering instruments of knowing and understanding; effectively communicating with others; adapting oneself to changes in life; cooperatively working in teams; and social-emotional competencies of resolving conflict through peaceful dialogue and negotiation. Aligned with these four pillars, all teachers will be trained by the ***Leader In Me* Foundation** on how to develop a culture of communication and leadership that helps children become leaders of their own lives, identify their own unique talents and abilities and encourage them to make a difference in the world. Teachers will learn how to implement hands on PBL from the **Buck Institute** and how to apply technology to learning across the curriculum from **City Tech** at CUNY. In the area of urban planning, teachers will collaborate with Pratt, the BEAM Center, the Salvatori Center and Urban Advantage. **Pratt'**s interdisciplinary PD curriculum promotes collaborative and creative strategies for design thinking and provides teachers with unparalleled training in urban planning. **Urban Advantage**, a standards based partnership program designed to improve students' understanding of scientific inquiry will provide teachers with PD in inquiry teaching and how to facilitate their free student class trips to science cultural institutions. Teachers will work with staff developers from the **BEAM Center** to

create PBL units in urban design with lessons that grow out of students' interests and questions, involve research and explore the urban environment. The PD will focus on differentiating instruction in urban planning for various students' learning styles. The **Salvadori Center** will work with teachers in developing vibrant, hands-on activities integrating urban design of New York City's past and present landmarks with math, engineering and science. The Center's program is well respected and research based. Sessions will be conducted monthly at school for all staff. Through this modeling and coaching, teachers will be learning STEM content as well as changing their pedagogy. **Big Idea Week** mentors will coach and model entrepreneurial pitch skills to enhance the communication component of the school's magnet theme.

Parents program: Expanding upon their current Parents as Partners program, the school will move from Family Night Academic Celebrations and Science, Math and Urban Planning Fairs that showcase student achievement to more participatory activities like discussion groups centering on neighborhood needs in urban planning and communicating with your child through new technology. Family trips to museums will be expanded to include family outings to technology and design studios. Potluck and PTA meetings will include participatory design projects in the Fab Lab. "Bring your Parent to School Day" will no longer be just for observation; parents will participate in STEM and urban planning experiencing the Four Pillars with their children.

***After School Programs at the Magnet Schools*.** Each school will have an after school program. Descriptions of the schools' after school programs are included in the school descriptions, above, and in *Priority 4 – STEM Education.* After school STEM activities will be developed by project partners and the magnet resource specialists and will be related to the theme of each school. All after school STEM activities will be project based, and require students to work together in the same way they would during the school day. To ensure that all parents are aware of after school

activities, they will be described during every parent activity, described on the website of each school, and be part of the normal communication that the school has with its families. Attendance will be taken for after school activities to ensure that students from all racial, ethnic and socioeconomic groups will take part. The goal is for after school activity participants to reflect the racial, ethnic and socioeconomic diversity of its school.

Out of School Informal Science As described in *Priority 4- STEM Education* and embedded in each school's magnet theme description described above, partners will also create family activities for students and family members to engage in at home and at the partner institutions. Each school will hold family days to get families started on these projects and to bring families with different backgrounds together in school and at partner institutions. For example, having family evenings or Saturday activities in school (time to be determined each school's School Leadership Team) four times each year and then to have follow-up family activities at partner institutions, would help families from different backgrounds to get to know each other within the context of school and outside of school.

(b) (2) The extent to which the applicant demonstrates that 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 that demonstrates commitment of any partners; evidence of broad support from stakeholders (e.g., State education agencies, teachers' unions) critical to the project's long-term success; or more than one of these types of evidence

Districts 14 and 32 have an outstanding record of continuing programs after grant assistance is no longer available and fully expect to continue the proposed Magnet Schools Assistance Program after federal assistance is no longer available. **As such, at the end of magnet funding, Districts 14 and 32 will continue to fund the magnet initiative through the strategic deployment of existing revenue streams, including local, state, and federal funding, as well as aggressive grant seeking.** The districts will leverage activities undertaken during the grant period and facilitate continued implementation of the magnet program through intentional operational and financial planning, broad grant-seeking activities, and expanded collaborations with local partners. **Magnet schools in District 14 that received Magnet Schools Assistance Program funding during previous cycles have been sustained following MSAP funding, an example of the established supports and partnerships in place to promote continued implementation of the magnet concept.**

Sustainability Planning: The project director will coordinate the development, starting early in the project's first year, of a detailed plan for program sustainability at each magnet school. He will bring together a sustainability planning team that contains individuals with decision-making authority and is representative of both internal and external stakeholders. Key to this plan will

be the integration of concrete operational supports as well as tangible resources that will build upon the substantial programmatic foundation established during the grant period.

The team will use the Planning for Sustainability Toolkit, developed by The MSAP Center in partnership with The Finance Project, to explicitly articulate a concrete theory of action for sustainability, including work to (1) prioritize the project activities to be sustained, including instructional, recruitment, and outreach strategies; (2) establish the project's ongoing personnel, fiscal, and other needs; (3) identify the resources available to meet those needs; and (4) determine the monetary and other resources to fill any identified shortfall. By maintaining a strategic orientation towards financing, and utilizing the flexibility afforded under the Every Student Succeeds Act, school and district officials will utilize existing resources to ensure the continuation of grant activities.

In accordance with the guidance provided in the Department of Education's April 13th, 2016 *Dear Colleague Letter*, existing federal funding streams will be leveraged to support the three year project and continue the thematic program at each magnet school, including: Title I funds to increase access to rigorous STEM coursework for all students, provide field trips to promote real-world hands-on STEM experiences, and to purchase mobile learning devices and create STEM labs and specialized learning spaces that promote active, inquiry-based learning; 21st Century Community Learning Center grants to provide high-quality STEM programs and activities outside of school hours; and Title II funds to provide professional development to school staff on STEM methods and content; to develop digital professional learning communities with STEM professionals; and to provide training to implement blended learning models to meet the needs of all students, including English learners and students with disabilities.

Fair Student Funding, which is based on a school's enrollment and student characteristics, constitutes the bulk of the funding available to schools in New York City. Principals have flexibility to utilize these funds as needed to ensure the execution of a rigorous academic model, which will include unique magnet programming at the proposed schools. Funding allocated through the New York State Contracts for Excellence are dispersed to New York City schools to be used for key program areas, including time on task and teacher quality initiatives and will also be used, along with state and federal categorical funding, such as those listed above, as supplemental support for the magnet program during the project period and following the termination of grant funding.

The sustainability planning team will continue to meet regularly throughout the grant period to continuously refine a multi-year data-driven sustainability financial and operating plan, aligned to the priorities and resources identified, and informed by feedback from the rigorous evaluation cycle.

There is broad support for and commitment to the project from the proposed partners. (Please see the letters of commitment from the partners in the appendix.) As part of the sustainability planning, project staff will work with the partners throughout the project to map out the level of services that will be continued by them after Federal funding is no longer available. There is also broad support from school stakeholders, including the teachers' union, and school leadership teams. (Please see stakeholders' letters of commitment in the appendix.) The full resources of these stakeholders will be marshalled to secure funding to sustain the project.

Aggressive Grant Seeking: Districts 14 and 32 will continue to coordinate grant-seeking efforts with district and NYC DOE staff throughout the MSAP project period to apply to funders who will both enhance magnet activities during the period of MSAP funding and address ongo-

ing program costs at the end of that period. In addition to the funding streams listed above, federal grants solicited may include the applications to the following agencies and programs: National Science Foundation; National Endowment of the Arts; National Endowment for the Humanities; National Aeronautical and Space Agency; Innovative Approaches to Literacy; Teacher Incentive Fund; Promise Neighborhoods, Investing in Innovation Funds (i3); Elementary and Secondary School Counseling Programs. New York State funding may include proposals to the following: Title I School Improvement Grant; 21st Century Community Learning Centers Program; McKinney Vento Grant; Learning Technology Grant; and Carl D. Perkins Career and Technical Education Act Grant. Additional support may be sought from the following business/association/foundation programs intended to support social and educational reform as well as well as advancement of the STEM domains: Ford Foundation; The Kresge Foundation; The GE Foundation; The New York Life Foundation; The Verizon Foundation; The Prudential Foundation; The Braitmayer Foundation; The Siemens Foundation; National Grid Foundation; The Heckscher Foundation for Children; Carnegie Corporation of New York; Deutsche Bank Americas Foundation; The Bill & Melinda Gates Foundation; Fund for Public Schools; The Coca-Cola Foundation: Educational Programs; American Honda Foundation; National Council of Teachers of Mathematics; ASCD's Teacher Impact Grants; JPMorgan Chase & Co.; Corning Foundation; AT&T Foundation; The New York Community Trust; and New York Foundation.

(b)(3) The extent to which the training or professional development services to be provided by the proposed project are of sufficient quality, intensity, and duration to lead to improvements in practice among the recipients of those services.

An Institute of Education Sciences, U.S. Department of Education (IES) funded research review sponsored by the Regional Education Laboratory, Southwest (REL SW), (Yoon, et al, 2007), (Yoon, 2008) identified nine studies (after examining more than 1,300) on the effect of teacher professional development on student achievement that met the What Works Clearinghouse evidence standards. An analysis of these studies found that "teachers who receive substantial professional development—an average of 49 hours in the nine studies—can boost their students' achievement by 21 percentile points." The studies that had 30 hours or more of professional development showed a positive and significant effect on student achievement from professional development. All nine studies focused on elementary schools and included workshops or summer institutes. Eight included follow-up sessions supporting the main professional development event illustrating the importance of follow-up activities after workshops. Even though the content of the professional development varied, the effect sizes were about the same: 0.51 for science, 0.57 for mathematics, and 0.53 for reading and ELA. We have identified one of these studies as demonstrating Evidence of Promise for the project's Professional Development (PD) component of the logic model for this grant—it is Saxe, et.al. (2001) Enhancing students' understanding of mathematics: a study of three contrasting approaches to professional support. (Please see *Competitive Preference Priority 5 – Supporting strategies for which there is Evidence of Promise* for details on this study.) Each of the nine studies links intensive professional development with improved classroom teaching resulting in higher student achievement as does this project. Based on an extensive review of the PD literature, Dr. Linda Darling-Hammond, et al, (National Staff Development Council, 2009) recommends that professional development should (1) be intensive, ongoing, and connected to practice; (2) focus on student learning and address the teaching of specific curriculum content; (3) align with school improvement priorities and goals;

(4) build strong working relationships among teachers. The Professional Development for this project will follow these research based recommendations. The professional development performance measure targets are for each teacher in a magnet school to receive at least 50 hours of PD each year to support curriculum and instruction improvement and at least 50 hours of PD each year in year to support magnet theme integration. **The proposed PD, supporting the professional development component of the logic model, is comprehensive and rigorous and, as demonstrated in the research, is of sufficient intensity and duration to lead to improvements in practice among the recipients of those services. This research also demonstrates the strong theory on which the project is based.**

The project's rigorous magnet PD program, using the *Great Schools Framework* as a blueprint, will provide intensive site-based and job-embedded professionalizing support to develop and implement the magnet theme. Embedded professional development in all magnet schools will include demonstration lessons and coaching performed by magnet resource specialists in conjunction with project partners, curriculum development/writing facilitated by magnet resource specialists, the project STEM/curriculum planner, project partners, inter-visitations among classroom teachers, and consistent metacognitive engagements to pause, think, write, and reflect on the efforts to help all students achieve excellence (Yoon et al., 2007). Project partners will play an important role in all PD activities. Partners that will provide PD for all project schools are the Buck Institute, the BEAM Center, City Technology, and Big Idea Week. A description of the PD they will provide can be found in *Competitive Preference Priority 4 – STEM Education*. In addition, each school will partner with other institutions to provide PD specific to the needs of their schools and themes. These partners include the Museum of Science in Boston, Southern Cross, LeAp, the University of Connecticut for SEM training, Studio in a School, the

Paley Media Center, the Salvadori Center, and Pratt University. A discussion of the PD these partners will provide can be found in each school's magnet description in section *(b)(1)*

Regular collaborative meetings of magnet faculty and staff will be organized into a variety of Professional Communities based on areas of concern, especially those related to their magnet themes. These critical teams will develop internal faculty driven leadership and encourage each other to think and learn about curriculum practices that have direct applicability to their classrooms (Bryk, et al., 1999; Leithwood, Begley & Cousins, 1994; Lieberman, Saxl, & Miles, 1988; Little, 1982, 1990; Louis, Kruse, & Bryk, 1995; McLaughlin, 1993). The implementation of the Professional Community (Bryk, et al., 2010) will result in meaningful PD as well as a series of metrics to measure their effectiveness around specific practices: (1) public classroom practice, in which teachers observe other teachers teaching; (2) reflective dialogue, in which teachers have the opportunity for critical conversations; (3) peer collaboration, in which teachers work together to develop curriculum and other school improvement initiatives; and (4) new teacher socialization, in which faculty proactively support its newest members. (Bryk, et al., 1999, 2010; Lieberman, Saxl, & Miles, 1988; Little, 1982, 1990).

Utilizing, both NYC resources, such as *Resources for Teacher Teams* (NYC DOE, 2016) presented in the Common Core Library, and the resources of MSAP funded partners, the Professional Learning Community will work collaboratively to build shared understanding of best practices and to increase differentiation and rigor across each of the core content areas through the lens of the magnet theme. Research has found a correlation between professional development and both improved instruction and student achievement when professional development focuses on the teacher's actual curriculum materials, standards, and assessment (Yoon et al., 2007). These opportunities for facilitated dialogue, coupled with structured guidance from magnet re-

source specialists and project partners, will permit teachers to navigate the implementation of the integration of the magnet theme, the STEM curriculum, and the Common Core in a way that meaningfully and demonstrably impacts student achievement.

(b) (4) The extent to which the proposed project is supported by strong theory

As discussed in the above sections *(b)(1)* and *(b)(3*), the project is rooted in solid re- search and demonstrates the project's foundation in strong theory. The project's **Theory of Action** is: (1) If all teachers, in each school, receive 50 hours of high quality Professional Development each year focused on Improvement of Core Subject Curricula and Instruction, and 50 hours each year on the Development of a Magnet Theme and its Integration into those curricula, then teachers will develop and implement Quality Magnet Curriculum and Instruction (a special curriculum capable of attracting substantial numbers of students of different racial and socioeconomic backgrounds). (2) If Quality Magnet Curriculum and Instruction is taught to students and becomes the core of the school's instructional program, and that is widely known by students and their families, then a large, diverse group of students will apply to a magnet school and minority group and socioeconomic isolation will be reduced. (3) If a magnet school's students are exposed to Quality Magnet Curriculum and Instruction for 10 hours per week (project year 3 performance measure target), they will then attain higher levels of achievement than carefully matched students who do not attend a magnet school.

The project's logic model is presented below. School level project models are included as an appendix.

NEW YORK CITY DISTRICTS 14 & 32 DISTRICT LEVEL LOGIC MODEL

Project Resources	Project Activities	Project Outputs	Short Term Outcomes	Medium Term Outcomes	Long Term Outcomes
				Annual Measures	3 Year Targets
District Level					
MSAP Support for Project Director, 2 full time staff, materials, etc.	Project Management	Good Fidelity of Implementation	School Benchmarks, fidelity to budget	MSAP PMs attained APR approved	Compliance review is good
	Desegregation: Student recruitment, application and selection activities	**Desegregation**: Large and diverse applicant pool. Enrollment lists	**Desegregation**: Applicant pool benchmarks	**Annual PM 1.1-1.7** Reduced MGI & SES Isolation. # applications > 65 per school	**PM 1.1-1.6** Reduced MGI & SES Isolation (6 & 12 percentage points)
NYC DOE & District Support, Policies, and Personnel	Oversight of Comprehensive Education Plans to ensure curriculum and instruction improvement and magnet theme integration	**School Level**			
School Level					
School Leadership and MSAP Staff (2-2.5 full time MRSs for each school)	**Desegregation**: Student Recruitment (e.g., open houses)	**Quality Magnet Curriculum and Instruction**: High quality, peer reviewed units that integrate the magnet theme with core academic subjects using new/improved instructional practices that are taught to students In-school and off site learning with partner institutions (Discrete Magnet Classes Presenting Magnet Theme to Students as Separate Subjects as Supplement to Integrated Units)	**Benchmark Examples Quality Magnet Curriculum and Instruction**: Improving C & I e.g., 85% of teachers agree that school focused on CCSS, NGSS alignment; Planned/Implemented Magnet Curriculum Dosage to date of site visit meets standard; Student Engagement, Motivation Increase; Heterogeneous Class standard attained by each site visit. PD e.g., Planned + Implemented to visit date meets standard. Magnet Theme and Systemic Reform FOI improves or is excellent.	**Annual Performance Measures (PM)** **PM 2.1 and 3.1:** Unit dosage and Quality targets attained; **PM 4.1-4.5** Increased reading, math and science test scores for all students **PM 6.1:** Classes are Heterogeneous	**PM 2.1** 100% Units Are High Quality **PM 3.1** Magnet Theme dosage 10 hrs/ week **PM 4.1-4.5** Increased Test Scores: reading, math, science **PM 4.6** Students will master magnet curriculum
Teachers' Knowledge, Skills and Experiences	**Improvement of Curriculum, Instruction & Student Academic Supports**: Develop/revise core academic magnet units based on NYC Frameworks and reforms/ supports (e.g. UDL & PBL)				
Students Interests, Needs, Skills, Knowledge	**Magnet Theme Development and Integration**: Develop and Integrate magnet theme into improved academic content. (Develop magnet classes.)			**Annual PM 5.1, 5.2** PD for C&I Improvement and Magnet Theme. 50 hrs/teacher for each category.	**PM 5.1, 5.2** PD for C&I Improvement, Magnet Theme. 150 hrs/teacher for each.
Partners	**Professional Development**: 50 hrs (Yr. 3) to support Curriculum and Instruction Improvement and 50 hrs (Yr. 3) for Magnet theme Integration				
Parents	**Parent Activities**: Planning	**Parent Activities:** Activities in 5 areas.	**Parent Activities Benchmarks**	**Parent Activities PM 6.2**	**Parent Activities** PM 6.2

(c) *Quality of Management Plan*

(1) The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks.

The logic model presented above in section *(b)(4)* is the foundation of the project. Project objectives to support the 5 core activities of the logic model are: (1) **desegregation** - objective 1: minority and socioeconomic isolation will be reduced at the proposed magnet schools; (2) **improve curriculum, instruction and student academic supports** and (3) **magnet theme integration** – objective 2: all students will receive instruction that includes their school's systemic reforms and magnet themes in units and courses aligned with CCSS and state standards;– objective 3: all students at each magnet school will receive magnet instruction; objective 4: student academic achievement will increase each year in ELA, math and science; objective 6a: all students in project schools will have equitable access to high quality education; (4) **professional development** – objective 5: provide professional development related to improvement of curriculum, instruction, and magnet theme development and integration; and (5) **parent involvement** – objective 6b: there will be an increase in parent participation at each magnet school. Please see the *Quality of Project Evaluation* section for a detailed discussion of the project's objectives and performance measures. The following table presents the objectives of the project, the primary annual activities/milestones related to the objectives, the person(s) responsible for the activities/milestones, and the timelines for accomplishing the annual activities/milestones.

Annual Project Management Timeline (October 1st – September 30th)			
Objective	**Activities/Milestones**	**Person(s) Responsible**	**Timeline**
1	Develop recruitment plans, including marketing/public information campaign	Project outreach and technology coordinator, school recruitment teams	Sept – Oct
1	Implement marketing/public information campaign	Project outreach and technology coordinator, school recruitment teams	Nov – Aug
1	Recruit students	Project outreach and technology coordinator, school recruitment teams	Nov – March
1	Application period	NYCDOE Office of School Enrollment	Oct – March PreK Oct – Jan K-5 Oct – Dec 6-8
1	Selection of students	NYCDOE Office of School Enrollment	May – PreK March – K-5 May – 6-8
2, 3,4, 6a	Establish Magnet Advisory Board (determine membership each year)	Project director, district superintendents, principals, school leadership teams	Oct

Annual Project Management Timeline (October 1st – September 30th)			
Objective	**Activities/Milestones**	**Person(s) Responsible**	**Timeline**
2, 3,4, 6a	Magnet Advisory Board meetings	Magnet Advisory Board members (parents, school leadership team representatives, community representatives, teacher representatives)	Monthly (or as determined by advisory board members)
2, 3,4, 6a	Magnet unit development/ discrete magnet class development	Project STEM/ curriculum planner, project partners, magnet resource specialists, teachers	Oct – Sept
2, 3,4, 6a	Magnet unit/discrete magnet classes implementation	Teachers	Oct – June, September
2, 3,4, 6a	Magnet unit quality review	Project STEM/curriculum planner, magnet resource specialists, teachers	Oct – Sept
2, 3,4, 6a	Implement heterogeneous classes	Teachers	Oct – June, September
5	Professional development related to the improvement of curriculum and instruction (PLCs, workshops, institutes, courses, coaching, mentoring)	Project PD partners, NYC DOE staff, project STEM/curriculum planner, magnet resource specialists	Oct – Sept

Annual Project Management Timeline (October 1st – September 30th)			
Objective	**Activities/Milestones**	**Person(s) Responsible**	**Timeline**
5	Professional development related to the magnet theme (PLCs, workshops, institutes, courses, coaching, mentoring)	Project PD partners, project STEM/ curriculum planner, magnet resource specialists, teachers	Oct – Sept
6b	Development of parent involvement plan	School leadership teams, district parent advocates, school parent coordinators, magnet resource specialists	Oct – Nov
6b	Implementation of parent involvement activities	District parent advocates, magnet outreach and technology coordinator, school parent coordinators, magnet resource specialists, teachers	Nov – Sept

Project Management – achieving the objectives of the project on time and within budget: The project schools' line of management goes from each Principal, to the District Superintendent, and finally to the Chancellor of the NYC DOE who oversees all of the city's 32 community school districts. All NYC DOE offices and staff will support the project, including staff from the Office of School Enrollment and contract/budget offices. The project director will work closely with each school's principal and report regularly to the two district superintendents to

achieve the objectives of the magnet project, outlined above, on time and within budget. The project director will manage all aspects of the MSAP project and supervise all magnet district-level staff: a full time STEM/curriculum planner, a full-time magnet outreach and technology coordinator, and a half time secretary, and will work closely with each school's principal in the supervision of the full-time magnet resource specialists who will guide the implementation of curricula related to the magnet theme at each of the five magnet sites. (Please see section *(d) Quality of Personnel* for a description of the roles, responsibilities and qualifications of the project director, STEM/curriculum planner, magnet outreach and technology coordinator, as well as the districts' superintendents and magnet schools' principals.).

NYC DOE Management Support – achieving the objectives of the project on time and within budget. NYC DOE officers will work with the district superintendents, principals and the magnet director to ensure that project objectives are accomplished and all fiscal controls are maintained. Grants, budget, and contract officers will provide appropriate internal controls to ensure that Districts 14 and 32 will adequately safeguard their assets, check the accuracy and reliability of their accounting data, promote operating efficiency, and ensure compliance with prescribed management policies and fiscal requirements. These officers will maintain fiscal control in adherence to the NYC DOE's accounting and auditing system, Chancellor's Regulations, and all regulations and laws established by the Federal Government and New York State Education Law. They will work closely with the project director to ensure the proper management of MSAP grant funds.

(c) (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.

In order to ensure that a diversity of perspectives are brought to bear throughout the project, the project director, the district superintendents, school principals and school leadership teams will form a committee to establish a Magnet Advisory Board for the project. The Advisory Board will consist of representative parents and teachers from the five magnet schools; representatives from the business community, including, but not limited to, the tech specialists and entrepreneurs working with the schools on their STEM programs; union representatives from the schools; and others to be determined by the committee. The Advisory Board will meet monthly or as often as established by Advisory Board and will review progress the schools are making towards meeting project objectives, including reviewing summaries of formative evaluations provided by the evaluator and the project director. The members of the Advisory Board will provide input to the project director on the operation of the project, including suggestions for project improvement, where necessary. The membership of the Magnet Advisory Board will be established each project year to ensure that the board continues to reflect a diversity of perspectives.

(d) (1) *Quality of Personnel*: The Secretary determines the extent to which—(1) the project director (if one is used) is qualified to manage the project.

All staff, both funded and not funded by the project will be highly qualified. **Project Director - 1.0, 100% FTE.** The qualifications for the magnet director have been established to ensure that the successful applicant possesses the commitment, knowledge, experience, and interpersonal skills needed to provide strong and effective leadership to the project. Although the position will be filled in accordance with the regulations of the New York City Department of Education, it is expected that Mr. Joseph Gallagher will be selected. **The magnet director will have the following qualifications:** (1) Advanced degree in education; (2) State certification as School Administrator; (3) At least 3 years of experience as a district level or school level supervisor or administrator responsible for equity/desegregation programs; (4) At least 5 years experience in curriculum development; (5) At least 5 years experience as a staff developer/teacher trainer; (6) Experience in and knowledge of systemic reform models and innovative programs; (7) Experience and knowledge related to working with parents of different races, ethnic, social and economic backgrounds in a magnet school; (8) knowledge of the Common Core Standards and NYS standards; (9) Experience working with community-based organizations, cultural institutions, agencies and other groups in initiatives related to systemic reform and innovative educational methods and practices; (10) Demonstrated leadership in the development of programs and courses of instruction that substantially strengthen students' knowledge of academic subjects and marketable vocational skills; (11) Demonstrated abilities in areas associated with effective leadership; and (12) excellent interpersonal skills. **Mr. Gallagher more than meets these qualifications.**

Mr. Gallagher is currently the Magnet Director of the New York City District 13/15 Magnet Schools Assistance Program which is just completing the third year of a three year project. Thus, Mr. Gallagher will be available to work full time on the project. Mr. Gallagher has extensive experience supervising the administration of Magnet Schools Assistance Program projects, as well as other funded programs. In addition to his current position of magnet director for the District 13/15 MSAP project, he has been project director for 4 other MSAP projects in New York City. These projects include 4 different NYC districts, 29 schools and 71 magnet staff. Mr. Gallagher's career as a public school educator spans more than 34 years. From 1981 to 1994, he was an English language arts teacher in a District 15 magnet middle school. His related experience in this position included supervision of magnet pupil admissions; participation in the School-Based Management/Shared Decision-Making Team; participation as chairperson on the Chapter I Schoolwide Project Team, with responsibility for writing the Chapter I Schoolwide Project Plan; and the development of curricula for language arts programs. In 1994, Mr. Gallagher became Director of Grants and Special Projects for District 15, a position which he held for nine years. In this role, Mr. Gallagher coordinated the magnet program, working closely with the magnet director, magnet staff and consultants to ensure adherence to all instructional, fiscal and reporting magnet requirements. During this time, Mr. Gallagher was also responsible for program coordination and oversight of many other funded programs for the district, including Attendance Improvement/Dropout Prevention Services, Legislative Grants, Comprehensive School Reform, 21st Century Community Learning Centers, and the District 15 School-to-Work Project. Mr. Gallagher's educational credentials include an M.A. in Secondary Education (English), M.S. in Educational Administration and Supervision, and state certificates in School Ad-

ministration and Supervision, as well as New York City and New York State professional licenses/certifications as teacher, principal, and administrator.

Duties and Responsibilities of the Magnet Director – 100% FTE. The magnet director is responsible for coordinating all aspects of the Magnet Schools Assistance Program. The magnet director will: (1) work closely with the district superintendents and the magnet principals to coordinate and manage all aspects of the MSAP project; (2) supervise the magnet STEM/curriculum planner and the outreach and technology coordinator; (3) coordinate the activities of magnet resource specialists; (4) ensure that the activities of the magnet program are continually focused on promoting racial and economic diversity; (5) assist each magnet school's principal and School Leadership Team in implementing their magnet school program, including: desegregation strategies, strategies to support socioeconomic diversity, PBL, systemic reforms, innovative curriculum and practices, incorporating STEM instructional strategies into each school's curriculum, new organizational designs, professional development, and adaptation of instruction to special student needs, all aligned to meet Common Core Standards and New York Standards; (6) work closely with District 14's and 32's parent advocates and the schools' parent coordinators on student recruitment and information outreach to ensure informed parental decision making in all aspects of the Magnet Schools Assistance Program; (7) work closely with Brooklyn Borough Field Support Center staff to support all curriculum initiatives and manage fiscal and budget aspects of the project; (8) coordinate the implementation of the project's evaluation plan with the project evaluation contractor and monitor the collection of all necessary data; (9) keep all project records; (10) monitor and evaluate the effectiveness of the project's desegregation plan and make any necessary revisions/changes; and (11) coordinate with other NYC

DOE and district staff to supplement project funds and to continue funding of the project after federal funding is no longer available.

(d) (2) The Secretary determines the extent to which other key personnel are qualified to manage the project.

MSAP-Funded Key Personnel

Project STEM/Curriculum Planner - 1.0, 100% FTE. The position will be filled in accordance with the regulations of the New York City Department of Education**.**

Qualifications: The STEM/Curriculum Planner will be required to have the following qualifications: (1) An advanced degree, with training and expertise in STEM; (2) at least 5 years experience in curriculum development and professional development, including in STEM, at the school and district level; (3) at least 5 years experience working with organizations and partners to provide PD, especially in STEM; (4) experience and knowledge related to working with parents of different races, ethnic, social and economic backgrounds; (5) knowledge of the Common Core Standards and NYS standards; (6); demonstrated expertise in using PBL strategies; (7) experience working with community-based organizations, cultural institutions, agencies to support curriculum development and professional development; (8) knowledge of the special needs of students incident to the reduction of minority group isolation; (9) experience in using innovative educational methods and practices; (12) experience in using varied approaches, strategies and materials to promote successful learning; and (13) demonstrated ability to work effectively with multicultural and multiethnic students and parents;

Duties and Responsibilities The magnet STEM/curriculum planner will report directly to the magnet director and will be responsible for working with the magnet schools and their magnet resource specialists, principals, School Leadership Teams and Professional Learning Communities (PLCs) and project PD partners to integrate the magnet theme, especially STEM activities, into each school's instructional programs. The magnet STEM/curriculum planner will: (1) serve as liaison for the School Leadership Teams and PLCs at each magnet school, as well as other district and community resources, related to thematic instruction and incorporating STEM into thematic instruction; (2) work with the magnet resource specialists, magnet principals and PLCs to develop and align magnet schools curricula, professional development programs and magnet theme-related instructional programs to meet Common Core Standards and New York State standards; (3) work with the PLCs to research existing exemplary programs that further standards-based instruction, especially STEM instruction; (4) work with the PLCs to establish consultant schedules for each magnet school; (5) establish linkages and develop service contracts and schedules for other collaborative agencies to provide services to the proposed magnet schools that are directly related to the magnet special curriculum and STEM at each school; (6) participate in all staff development and curriculum development workshops/activities; and (7) participate in all educational program development activities related to theme development, infusing STEM into all instructional areas, new pedagogical approaches to program development and systemic reform program development, new instructional strategies, etc., that further standards-based instruction.

Magnet Outreach and Technology Coordinator - 1.0, 100% FTE. The position will be filled in accordance with the regulations of the New York City Department of Education**.**

Qualifications: (1) an advanced degree in education; (2) experience in working with students and families from different racial and ethnic backgrounds; (3) experience in prioritizing and co-ordinating both school-based and community based outreach and recruitment activities; (4) experience with website development and graphic design; (5) experience in creating multi-media materials and documents using technology; (6) familiarity with use of presentation tools and media; (7) at least five years experience incorporating instructional technology strategies; (8) at least five years experience in staff development/teacher training; (9) and ability to be creative, flexible and project-oriented in a large, grant-funded initiative serving multiple schools.

Duties and Responsibilities The magnet outreach and technology coordinator will: (1) working collaboratively with the project director and with each district's parent advocates and each school's parent coordinator and school based teams, be responsible for planning, coordinating and implementing a comprehensive magnet outreach program utilizing technology and multi-media resources; (2) develop magnet materials, products and technology tools, such as websites, flyers, brochures, banners, advertisements, and databases; (3) provide information to parents, community members, and community agencies on the schools' magnet programs; (4) attend citywide parent meetings; (5) participate in annual School Fairs and other recruitment activities and coordinate the presentations of the magnet schools; (6) develop a plan for recruitment and advertisement, in conjunction with each of the magnet school recruitment teams; (7) work cooperatively on a regular basis with parent groups and the schools' School Leadership Teams; (7) support technology integration at the five magnet schools, engaging in professional development and training activities that incorporate effective practice and new technology tools into the magnet program; (8) assist schools in the implementation of the magnet technology component as

part of magnet-theme related activities to achieve project goals; and (9) train educational staff and others in the use of media and technology.

Qualifications of the Project Evaluator: American Education Solutions. American Educations Solutions (AES) will evaluate this project. Over the past 20 years, AES has evaluated 57 Magnet Schools Assistance Program grants. In addition, the AES team has partnered with the Education Alliance at Brown University and the SERVE Center at the University of North Carolina on 10 rigorous MSAP evaluations. For the 2010-2013 cycle AES partnered with the National Center for Research on Evaluation, Standards, and Student Testing (CRESST) at UCLA on 5 rigorous MSAP evaluations, as well as on survey development and analysis. AES is continuing its partnership with CRESST for the current 2013-2016 cycles with another 5 rigorous MSAP evaluations and survey development and analysis. CRESST will perform the rigorous test score study described in the evaluation section of this proposal. The AES MSAP site visit team includes former school administrators with extensive magnet program experience. All have been teachers and have many years of evaluation experience. Two were assistant/associate superintendents responsible for all magnet projects in large districts, 4 were magnet school principals, 2 were magnet directors and one an Equity Assistance Center director. The duties and responsibilities of the evaluators are described in this proposal's evaluation section.

Qualifications of Key Personnel at No Cost to the Project

District 14 Superintendent: Alicja Winnicki, Superintendent of District 14 since 2012, has worked for the NYC DOE for 23 years, as Principal, Assistant Principal, Literacy Teacher Trainer, ESL Teacher, Bilingual Coordinator, Staff Developer, Curriculum Writer, and Supervisor of a weekend academy for refugee students. She has experience related to the development of curriculum and of various programs and services that support educational equity, such as the rein-

statement of a one-to-one technology program in one school and the development of regional academic intervention services for all middle schools in Brooklyn South and Staten Island. She has been a Member of the Commissioner's Advisory Council (New York State Council of School Superintendents). She holds licenses as a School Administrator/Supervisor, School District Administrator, and as a Teacher of English to Speakers of Other Languages NYC English Teacher (grades 7-12). She has an MS Ed., in Administration and Supervision, an M.A. in TESOL, and M.A. in Polish Literature and Language.

District 32 Superintendent: Lillian Druck has been a NYC DOE educator for 34 years. Prior to assuming her current position in 2007, she was Local Instructional Superintendent (Region 4), Principal, Assistant Principal, School-Based Staff Developer, Bilingual Coordinator/Teacher Trainer, and Teacher (bilingual, dual language, ESL). She has also served as Senior Achievement Facilitator. In that position she provided leadership and training to a network of school-based Inquiry Teams on the use of NYC DOE accountability tools to analyze data and increase student learning. She has planned and facilitated Principals Institutes and mentored aspiring principals through the NYC Leadership Academy. She has extensive experience as <u>an educator of ELLs:</u> supervising Department of English Language Learners Instructional Specialists<u>, designing and implementing bilingual and ESL curriculum/instructional programs; and developing a bilingual coordinators' administrative manual.</u> She holds licenses as a New York State Pre-K-grade 6 School Teacher, School Administrator and Supervisor, and School District Administrator, and as a NYC Principal of Day Elementary School, Education Administrator (Senior Staff Development and Training Instruction Specialist), and Supervisor of Bilingual Education. She has an M.A. in Administration and Supervision and an M.A. and B.A. in Bilingual Education.

Principal of PS 120: Liza Caraballo-Suarez has over 30 years of experience in NYC Schools as a Principal, District ESL Supervisor, ESL teacher, and classroom teacher. As the principal for the last 15 years, she has integrated multicultural strategies with the school-wide curriculum, strategically planned and allocated resources to enhance PBL, and provided extensive professional development for staff members. She has collaborated with residencies to create multi-sensory learning experiences for students. She holds licenses as a NYS School Administrator/Supervisor, NYS School District Administrator, and NYS Permanent Teacher, as well as a TESOL Ancillary Certificate. She has an MS degree in Administration and Supervision, a B.A. in Special Education, and an M.S. in Elementary Education. She is currently pursuing a Doctorate in Educational Leadership. She is President of the New York City Elementary School Principals Association, and, for more than a decade, has been an Executive Board Member of the New York City Council of Supervisors and Administrators. She has won multiple awards for her educational leadership.

Principal of PS 123: Arelis Parache has almost 25 years of experience in NYC Schools as a Principal, Assistant Principal, and classroom teacher. At PS 123, she has remodeled the Dual Language Program, mentored teachers in the creation and implementation of powerful learning environments, significantly increased parent involvement, and strongly backed participation in the Respect for All program, which supports equity by challenging discrimination and bullying. As Assistant Principal at two elementary schools, she spearheaded a system for collecting and tracking school-wide Writing Data and supported teachers in effectively implementing Teacher's College curriculum. As a Principal Intern in Bank Street College's Graduate School Principal Institute, she served as a Staff Developer/Data Specialist and Inquiry Team Member. She holds licenses as a NYS School Building Leader and as a School District Leader, as well as

a NYS Permanent Teacher. She has a. Ed.M. degree in School Leadership, an Ms.Ed. in Science in Education, and a B.A. in Early Childhood Education, as well as a NYC Spanish Extension Certificate (Bilingual Common Branch).

Principal of PS 157: Juliana Notaro has been an educator for 34 years, including 24 years as a NYC DOE Principal, Assistant Principal, After-School Program Supervisor, Summer School Site Supervisor, Teacher Trainer, Literacy and Phonic Trainer, Library Media Specialist, and classroom teacher. At PS 157, she assisted with the development of middle school curriculum for its expansion from a Pre-K to a grade 5 school to a Pre-K to grade 8 school, including developing courses, programming and unit plans for those grades. She supported diversity by setting up the Respect for All Headquarters at PS 157. She strengthened parent engagement by introducing student-led Parent-Teacher Conferences to Middle School grades and setting up "Open House Fridays" for parents to visit classes in session. She holds licenses as a NYS School Administrator/Supervisor, a NYC Education Administrator (Pupil Personnel), and a NYC Teacher of common Branch Subjects. She holds an M.S. in Administration and Supervision, an M.S. in Elementary Education, and a B.A. in English. She holds licenses as a NYS School Building Leader and as a School District Leader, as well as a NYS Permanent Teacher.

Principal of PS 196: Janine Santaromita Colon has had more than 30 years of NYC DOE experience, including 17 years at PS 196, primarily as its Principal. She has also been Assistant Principal and Supervisor of Special Education at PS 196, as well as District Special Education Teacher Trainer and Staff Developer and Special Education teacher. She has initiated and supervised new academic and non-academic student programs, piloted a grade 5 technology literacy program, secured NYC Council funding for a community media technology center, collaborated with parents through the Parents as Art Partners program, and worked with staff and

community partners to develop a comprehensive no-cost Saturday program for adults and children. She holds licenses as a NYS School Administrator/Supervisor. She holds an M.S. in Administration and Supervision and a B.S. in Special Education.

Principal of MS 582: Brian Walsh has 25 years of experience as a NYC educator. Prior to becoming the Founding Principal of MS 582 in 2004, he was an Assistant Principal, Teacher Trainer, and classroom teacher. He has researched and supported equity through access to technology for all students, peer mediation and mentoring programs, and cross-curriculum teaching. He has been recognized by District 14 for his instructional leadership through appointments to the District Leadership Team and as a Mentor to Principals. He is an instructor in the Center for Integrated Teacher Instruction (College of St. Rose), teaching Introduction to School Building Administration. He holds licenses as a NYS School Administrator/Supervisor. He has an M.A. in Liberal Studies and a B.A. in English.

(d) (3) The Secretary determines the extent to which teachers who will provide instruction in participating magnet schools are qualified to implement the special curriculum of the magnet schools.

New York State has taken strong measures to ensure that its teachers have the qualifications for meeting the highest teacher quality standards. All magnet classroom teachers and magnet resource specialists and classroom teachers will be required to be effective as described in the new Every Student Succeeds Act of 2015 (ESSA). That is to say, they will be teachers who meet NYS certification and licensure requirements, including any requirements for certification obtained through alternative routes to certification, or, with regard to special education teachers, the

qualifications described in section 612(a)(14)(C) of the Individuals with Disabilities Education Act (20 U.S.C. 1412(a)(14)(C). The vast majority of the classroom teachers in these schools are seasoned teachers (approximately 90% in the five magnet schools), having taught in the schools for many years.

Districts 14 and 32 have large pools of teachers and administrators with many years of experience in curriculum development and, in the case of District 14, many years of experience in MSAP desegregation strategies, who have been actively involved in endeavors related to the restructuring of elementary, middle, and high schools and other initiatives. The project will recruit magnet resource specialists from among this pool of highly qualified, effective teachers. In order to hire magnet resource specialists who have the best qualifications to teach the specialized curriculum at each magnet school, Districts 14 and 32 will recruit from outside of their districts as well, if necessary.

The magnet program will be facilitated in each school by highly qualified and effective teacher specialists, to be known as magnet resource specialists, who will lead the school in standards-based education aligning curriculum, instruction and professional development to Common Core and New York standards; support the implementation of the magnet theme; provide leadership in infusing the magnet theme and STEM instructional strategies into all content areas; and work with the schools' instructional staff to integrate the magnet theme, including STEM, using innovative educational practices and strategies. **All magnet resource specialists will be required to have the following qualifications:** (1) New York City and New York State teaching license and certification; (2) minimum degree of Bachelor of Arts or Science; (3) demonstrated expertise in the theme of the magnet school or STEM, e.g., subject area certification, professional organization certification, etc.; (4) demonstrated expertise in implementing

PBL strategies; (5) demonstrated experience in standards-based instruction and the alignment of curriculum, instruction, professional development and assessment with Common Core and New York State standards; (6) experience and/or graduate work related to the theme of the magnet school and STEM; (7) successful experience as a staff developer at the school or district level; (8) successful experience in teaching students from varied social, economic, racial and ethnic backgrounds; (9) knowledge of the special needs of students incident to the reduction of minority group isolation; (10) experience in using innovative educational methods and practices; (11) experience in using varied approaches, strategies and materials to promote successful learning; (12) demonstrated ability to work effectively with multicultural and multiethnic students and parents; (13) knowledge and experience in using technology as a tool for learning; and (14) demonstrated ability to work as a member of a committee or team with parents, teachers and administrators. In addition, each magnet school has established specific criteria for its magnet resource specialists related to its magnet theme. The consortium is requesting 10.5 magnet resource specialists – 2.0 to 2.5 at each of the magnet schools.

To determine personnel qualifications the Secretary considers experience and training in fields related to the objectives of the project, including the key personnel's knowledge of and experience in curriculum development and desegregation strategies

Knowledge of and Experience in Curriculum Development: As demonstrated by the descriptions of their experience presented earlier, the District 14 and District 32 Superintendents and magnet principals have extensive expertise in curriculum development and working to increase equity for all students, especially English language learners. A theme-based approach to instruction to improve academic achievement and promote diversity will be used in the Districts14 and

32 magnet schools. A particular focus in both districts has been the development of interdisciplinary curriculum materials and activities that cut across content areas and enhance and enrich student learning.

Knowledge of and Experience in Desegregation Strategies: The Superintendents of Districts 14 and 32 and school principals, have extensive knowledge and experience in desegregation strategies. The Superintendents and principals have been teachers and supervisors in highly minority group isolated schools and have worked with school staff to implement equity and desegregation strategies.

Districts 14 and 32 have been actively involved in desegregation strategies in order to meet the needs of a student population that is characterized by great diversity. Specifically, they have participated in New York City's Open Enrollment Plans since the 1960s and have rezoned school attendance zones over the years to include neighborhoods that have more diverse ethnic and racial populations. As a result of these initiatives, school and district staff has gained experience in a full array of desegregation and equity issues and strategies. Further, District 14 has been fortunate to receive Magnet Schools Assistance Program funding in former funding cycles. As a result, key district and project personnel, as well as project school staff, have gained valuable knowledge and experience in all aspects of desegregation strategies and in developing theme related curricula to promote equity and excellence in the schools.

(e) Quality of Project Evaluation: (1) The extent to which the methods of evaluation provide for examining the effectiveness of project implementation and strategies.

(2) 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.

(3) The extent to which the methods of evaluation will provide performance feedback and permit periodic assessment of progress toward achieving intended outcomes.

This evaluation, spanning the three years of this project, will assist school and district staffs to modify and improve project performance helping them achieve high levels of fidelity of implementation and attain project outcomes. The evaluation will also produce information needed by the United States Department of Education to properly evaluate project effectiveness as well as determine if project implementation strategies are in place and effective in insuring that all project activities are implemented as designed and on time, and that adequate progress is made toward the attainment of all project outcomes. Finally, the evaluation will insure that feedback structures and processes are in place so that formative report recommendations and findings are used by project and school staff and result in project improvement.

Data Collection: This evaluation will draw on a wide variety of data to provide substance and context for both formative and summative reports. Quantitative, extant data (e.g. enrollment information, student demographics and standardized test results) will be used in conjunction with student and teacher surveys, as well as with qualitative data (e.g. interview and observation data, comprehensive education plans, curriculum materials, professional development records) to insure a thorough and balanced evaluation.

The evaluation contractor will develop a complete set of data collection instruments (including surveys, document requests, and walkthrough, observation and interview protocols) designed to provide sufficient information to address objectives and performance measures and supplement extant data. However, extant data will be used whenever possible to lessen the burden on school and project staff. The data to be collected will include: **Student academic achievement, demographic, enrollment and other data:** The contractor will collect standardized test score data (e.g., school and grade level and individual student reading, mathematics, science data) needed to address performance measures related to student academic achievement and perform the quasi-experimental test score analysis. Enrollment data disaggregated by race/ethnicity and socioeconomic status data (students eligible for free or reduced lunch) collected by the district will indicate the extent to which each school and the project succeeds in meeting desegregation related performance measures including reducing minority group isolation and increasing socioeconomic integration. Applicant pool, student selection and student enrollment data will help explain the extent to which the reduction in minority group isolation and increasing socioeconomic integration performance measures were attained and help determine how performance in this area can be improved.

Document requests: The contractor will request documentation from magnet school teachers and MSAP staff to help determine the quality and extent of MSAP implementation. Examples include: ► **descriptions of and dosage** (amount of program delivered) **for** units and courses that present the magnet theme to students; and student recruitment, teacher professional development, parent involvement and planning activities (including an implementation plan); ► **schedules** of school based magnet staff; ► comprehensive education plans. **Observation and interview data** will be collected, during three annual visits to each magnet school, by trained evaluators with

extensive experience as magnet school practitioners. During each visit, the evaluator will conduct a walkthrough, observe lessons, and interview teachers, administrators, students and parents. The evaluators will develop an open-ended interview protocol to determine participants' perceptions of their schools and the contextual environment that surrounds their school and community. These semi-structured interviews will allow participants to reflect on their experiences in their school generally, with a particular focus on what works and what needs improvement.

Surveys will be administered annually to all teachers at each magnet and comparison school and a sample of students (one complete grade) at each magnet and comparison school. Comparison schools will be selected based on school size, grade span, and school-level student achievement and demographics. Drawing on its 20-year history of MSAP and regular and rigorous evaluations, American Education Solutions developed survey items and scales with its survey consultant, Dr. David Silver, a senior researcher at UCLA's CRESST Center, and currently, Dr. Jia Wang, a senior research scientist at CRESST. *These survey items are directly related to the purposes of the MSAP and the logic model, objectives and performance measures of this proposal*. Validated survey items and scales measure constructs including school climate, professional development hours (formal, collaborative and coaching) and effectiveness, student engagement and motivation, student academic commitment and expectations, student and teacher perceptions of intergroup relations and magnet theme implementation, standards based instruction and systemic reform implementation and parent involvement, teacher insights of what works, what is missing, and areas of improvement, as well as magnet-specific professional development dosage.

Formative Evaluation: The evaluation contractor will aid in the continual improvement of the project through formative evaluation, an examination of implementation that returns information

to project, school and district staff to help them improve program performance. Formative evaluation includes the study of program fidelity (the degree to which a program is implemented as designed) and reach (the proportion of the target group that participates). Components of fidelity include: ► adherence – the degree to which the program adheres to its goals, plans, activities, timeline; ► dosage – the amount of program delivered; ► quality – the quality of program activities and services; ► responsiveness of participants to program activities; ► program differentiation – unique features when compared to non-magnets.

Formative Evaluation Reporting: Data will be collected, as available, and analyzed, and recommendations will be discussed with the project director and school staff throughout the year. **Five formative evaluation reports** will be written by evaluators each school year:

Reduction of Minority Group Isolation (MGI) Report: Demographic and enrollment data will be compared with applicant pool, student selection and other data from the previous school year and with performance measures. By November, discussions related to the attainment or partial attainment of performance measures related to the reduction of MGI will help the district and magnet schools modify recruitment strategies and activities to attain better results. Measures of fidelity include adherence to recruitment plans and student selection procedures; and dosage, the "amount" of recruitment. Quality and responsiveness will be determined by changes in school enrollments, especially for entry grades, and the size and diversity of applicant pools.

Site Visit Reports are opportunities to provide feedback based on data related to the development and implementation of the project. After each of three annual site visits, a report will be written by the site visitor and submitted within ten days. It will summarize the findings of the visit and include recommendations for improvement. Site visitors will discuss proposed recommendations with school and MSAP staff during each visit. **Documentation Reviews,** included

in all three site visit reports, will summarize descriptive and quantitative data related to magnet curricula, systemic reforms, parent activities and professional development, and report on: adherence (e.g., activities implemented on schedule), dosage (e.g., the amount of time students, teachers and parents are exposed to grant activities such as magnet units and courses, professional development and parent activities), quality (e.g., peer reviews of magnet related units). The combined site visit report/documentation review summarizes how much progress has been made towards attaining performance measures especially those related to magnet theme and systemic reform (including improvement of curriculum and instruction) implementation (2.1, 3.1), professional development (5.1-5.2) and fidelity of implementation. The reports, distributed to and discussed with school staff three times each year, help them to understand if they are on track to attain the intended project outcomes, including performance measures and if not, why and how the project activities can be improved. **Survey Reports** will include item by item results for each school, summaries of survey construct results for each school, and, for years two and three, comparisons between current and the previous year's results. Trends (e.g., relationship between magnet implementation and student engagement and motivation, between professional development dosage and impact) are explored. Other formative evaluation strategies include:

Short Term Outcomes. Benchmarks are short term outcomes that indicate whether adequate progress is being made towards the attainment of annual performance measures. Most are derived from site visit report or survey items. Since surveys are administered in the spring of each year, these benchmarks, reported by the end of the school year, can help the project director make adjustments by the beginning of the following school year. Site visit items (e.g, professional development and curriculum dosage, quality indicators) are reported and reviewed with schools three times during each project year. The most critical benchmarks are included in the

performance measure section which follows. The project director and evaluator can decide on additional benchmarks, derived from site visit or survey items, that could be helpful guides to one or more schools. Desegregation benchmarks are derived from applicant and enrollment data. The degree to which benchmarks are attained will be reported in the site visit and survey reports.

Implementation Strategies: Fidelity of implementation may be affected by the complexity of the project or intervention. Learning the program and each of its components through intensive professional development and receiving implementation support from project staff (e.g., coaching, demonstration lessons, resource support), colleagues (e.g., unit quality peer review, collaboration, intervisitations) and evaluators (e.g., site visit and other formative reports and feedback including progress on benchmarks) is essential and will occur as previously described. Having additional strategies to improve fidelity of implementation are important and include: **Planning:** Schools started planning their magnet themes. However, implementing a complex program needs additional planning. Therefore, every school, with the guidance of the project director, will create an implementation plan based on this proposal and its school level logic model. The process begins by revisiting and clearly explaining, to teachers and principals, project activities and why they will result in expected outcomes, the logic model and the theory of action so that stakeholders understand what is being implemented and why. Although this was part of the initial planning process prior to submission, it is still an important part of pre-implementation planning. Using the grant application and logic model, school staffs will list and describe the activities to be implemented, the professional development for teachers that will support the implementation of these activities, the people and organizations who will provide the professional development and a timeline. They will also outline, at a minimum, all units for the year including

unit content. This activity recognizes the best practice of planning the entire year prior to implementation, in sufficient detail, to enable a strong and complete implementation.

Peer review of unit quality: Each school will create, with the guidance of the project director and the STEM/curriculum planner, a unit quality rubric. All magnet units must be reviewed to determine if they meet the quality review criterion. Review sessions will include teachers' discussions of units. The rubric also provides a school-wide structure for inter-visitations and unit development.

Review of site visit reports, **its findings and recommendations**: Each school will develop a process for reviewing the site visit reports, discussing findings with staff and implementing recommendations. Fidelity of Implementation will be monitored and reported on during each site visit as will each school's implementation plan, peer review of units, review of the previous report and progress made on implementing recommendations. A similar review process will be implemented for the findings of the **surveys**.

The ultimate effectiveness of the implementation and implementation strategies will be determined by the extent to which project outcomes will be attained, including reduction in minority group and socioeconomic isolation and test score improvement, and statistically significant improvements in test scores for students attending magnet schools when compared with carefully matched non-magnet school students (quasi-experimental analysis of test scores by the Center for Research on Evaluation, Standards, and Student Testing (CRESST) at UCLA.

Summative Evaluation and Reporting: The evaluator will determine the extent to which annual objectives and performance measures (medium term outcomes on the logic model) are attained. Data sources were described above. The evaluator will collect and analyze the data, prepare two annual performance reports (APRs) and one final report summarizing findings, and dis-

cuss the results with district and magnet school staffs. (For previous MSAP cycles, there were two versions of the APR each year. The APR was submitted in May to demonstrate progress made to date. The final APR, called the Ad Hoc Report, was submitted after the end of the project year--September 30.) The following section describes the annual performance measures (medium term outcomes), their relationship to each MSAP program purpose and to this project's logic model and how the evaluators will assess their attainment for the APRs (APR and Ad Hoc Report) and final report (e.g., indicators, measures of change, data collection methods, data sources and frequency of data collection). The most important benchmarks associated with each performance measure are also described. Long term outcomes on the logic model are the year 3 performance measures and represent the outcomes for the entire project period.

Project Outcomes: This proposal's outcomes are aligned with the six purposes of the Magnet Schools Assistance Program (MSAP) and the logic model for this project. A set of objectives and performance measures follow the Program Purpose and logic model activity they address. The Benchmarks are short term outcomes that indicate if adequate progress is being made towards the attainment of annual performance measures.

Program Purpose 1: *The elimination, reduction, or prevention of minority group isolation in … schools with substantial portions of minority students….* ***Logic Model Activity:*** *Desegregation – Student recruitment, application and selection activities;* ***Benchmark****: for applicant pool - proportion of isolated students are 10 percentage points less than actual enrollment for each school.*

All proposed magnet schools will reduce minority group isolation and increase socioeconomic integration by decreasing the percentage of Hispanic students and increasing the percentage of middle class students. The percentage of Hispanic students in each school is greater than the district-wide average of Hispanic students in PreK through eight (the grades served by the project)

in their respective districts (60.5% in District 14 and 79.0% in District 32). The proportion of low income students at each school is greater than the district average in their respective districts (59.7% in District 14 and 85.7% in District 32). The district-wide PreK to grade 8 enrollment and projections are on Table 1: Enrollment Data-LEA Level.)

Objective 1. Minority group and socioeconomic isolation will be reduced at the proposed magnet schools. (This objective addresses MSAP Performance Measure a.)

Performance Measures 1.1-1.5: By October 1 of each project year, at each magnet school, approved enrollment targets for each racial/ethnic group (see Table 3: Enrollment Data-Magnet Schools) will be attained by reducing the isolation of Hispanic students (using 2015-16 as the baseline) by at least 2 percentage points by year 1, 4 percentage points by year 2 and 6 percentage points by year 3. The schools and their 2015-16 enrollments of Hispanic students (the isolated group), as well as the schools' low income percentages, are: **1.1 PS 120** District 14 (PreK-5) (79.8% Hispanic, Low Income: 75.4%). **1.2 PS 157** District 14 (PreK–8) (81.6% Hispanic, Low Income: 70.8%) **1.3 PS 196** District 14 (PreK-5) (77.0**%** Hispanic, Low Income: 87.1%); **1.4 ► MS 582** District 14 (6-8) (71.8% Hispanic, Low Income: 71.3%). **1.5 ► PS 123** District 32 (PreK - 5) (89.9% Hispanic, Low Income: 97.0%)

1.6: By October 1 of each project year, for each magnet school, the proportion of low income students will be reduced by at least 4 percentage points compared with the previous year. (A low income student is defined as a student who is eligible for free or reduced lunch.)

1.7 For each project year, each magnet school will receive at least 65 applications.

Assessment: School enrollment data, disaggregated by race/ethnicity and socioeconomic status will help determine the degree of attainment of 1.1-1.6. Each year (October 1), the percentage of students in the isolated racial/ethnic group and low income students enrolled in each school will

decrease. Baselines are 2015-16 school enrollments, i.e., applicant pool (applications for magnet school seats) and student selection data (students who applied and were selected) will determine if 1.7 was attained and explore how outcomes can be improved for all measures.

Purpose 2: *To develop, implement and expand magnet school programs that will assist LEAs achieve systemic reforms, and provide all students the opportunity to meet challenging State academic standards.* ***Logic Model Activity:*** *Improve Curriculum, Instruction & Student Academic Supports;* ***Benchmark****: 85% of teachers at each school agree that a moderate or a great deal of emphasis (as opposed to no or little emphasis) was placed on (a) alignment of curriculum content and assessments with CCSS and state standards; (b) Designing professional development linked to CCSS state standards; (c) data based decision making; (d) RTi. (e) At least 85% of teachers will teach content or skills using structured small group activities daily or weekly. (Survey results.)* The implementation of systemic reforms and improved curricula, instruction and student academic supports will be facilitated and supported by the project staffs. Classroom teachers and magnet resource specialists will reexamine and revise or write improved units in core academic subjects during common planning time during school hours, supplemented with after school and summer sessions. **Objective 2:** All students will receive instruction that includes their school's systemic reforms (e.g. PBL, SEM, and RtI) and magnet themes in units and courses aligned with CCSS and State standards.

Performance Measures: **2.1** By the end of each project year, at each magnet school, at least 70% (year 1), 85% (year 2) and 100% (year 3) of core academic magnet units will meet school and project quality criteria determined during peer reviews using a unit quality rubric.

Assessment: Unit quality rubrics will be designed by each school with the assistance of the magnet STEM/curriculum planner. Scores meeting quality review standards will be determined.

Reviews will occur 2-4 times per year as determined by each school's planning committee. Since this is a peer review process, teachers will review each other's units. Magnet resource specialists will facilitate. Baseline is zero for 2015-16. The percent of units meeting quality criteria increases each year.

Purpose 3: *The development, design and expansion of innovative educational methods and practices that promote diversity and increase choices in public elementary and secondary schools ….*

Logic Model Activity: *Magnet Theme Integration;* ***Benchmark****: (a) Dosage for implemented and planned units attains the target number of hours for project year. (Checked during each site visit.) (b) See Benchmark for Project Purpose 2. (c) Student surveys indicate that engagement, motivation, academic commitment and interest in magnet theme increase each year (year 1 is baseline). 90% of students are interested in magnet theme and find it challenging.* Magnet Theme Integration, Improvement of Curriculum and Instruction and intensive Professional Development will produce Quality Magnet Curriculum and Instruction which will increase student diversity and choice because the curricula are not offered at other schools.

Objective 3. All students, at each magnet school, will receive magnet theme instruction.

Performance Measures: **3.1** By the end of each project year, all students, at each magnet school, will receive magnet theme instruction coordinated with or including systemic reforms for at least 3 (year 1), 6 (year 2) and 10 (year 3) hours per week.

Assessment: Success will be determined, by the evaluators, through unit plan analysis and confirmed with interviews, and walkthroughs (3 times per year) and surveys. Unit summaries are submitted by each school 3 times per year. Entire units are made available by school (magnet resource specialists) to evaluators (on-line access) on a continuous basis. The dosage is the average number of hours that each student receives magnet theme related instruction through discrete

(magnet theme) classes and integrated units per week. Dosage is reviewed throughout each project year to determine if the schools are on target for reaching curriculum goals. The baseline is zero for 2015-16. The number of hours will increase each year to meet the target.

Program Purpose 4: *Courses of instruction in magnet schools that will substantially strengthen the knowledge of academic subjects and the attainment of ... career, technological and professional skills of students...* ***Logic Model Activities:*** *All activities.* ***Benchmarks****: See Benchmark for Project Purposes 2, 3, 5 and 6.* At the elementary and middle school grades, English language arts and mathematics performance is evaluated based on New York State ELA and math assessments in grades 3 through 8. Similarly, at the elementary and middle school grades, science performance is evaluated based on the 4th and 8th grade New York State Science Assessments. For each school in New York State, the total population and each student subgroup is assigned a Performance Index (a value from 0 to 200) for English language arts, mathematics, and science. These performance indices are calculations based on the number of students at each of four performance levels (Basic, Basic Proficient, Proficient, and Advanced) for the relevant assessment. New York also creates EAMOs (Effective Annual Measurable Objectives) which serve as targets for what Performance Index the total population of a school and each of its subgroups need to reach in English language arts, mathematics, and science. EAMOs are set for the "All Students" group and for each student subgroup relevant to a school's accountability status. These are Asian; Black/African-American; Hispanic; American Indian/Alaskan Native; Native Hawaiian/Other Pacific Islander; White; Economically Disadvantaged, Students with Disabilities, and Students with Limited English Proficiency. If an EAMO is not attained, a subgroup or a school can still meet the annual improvement target by attaining the Safe Harbor

criterion: a 10% improvement year-to-year improvement the Performance Index scored by the school/subgroup.

Objective 4: (a) By the end of the project period, for each magnet school, EAMOs (Effective Annual Measurable Objectives) or Safe Harbor will be attained for all students and for all student subgroups. (b) Each year, more students will reach proficiency in reading, math, and science.

Performance Measures:

4.1: ELA EAMOs or Safe Harbor criteria for the total population and for each subgroup of students will be attained by: one magnet school by the end of project year 1; three magnet schools by the end of project year 2; and all five magnet schools by the end of project year 3.

4.2: Mathematics EAMOs or Safe Harbor criteria for the total population and for each subgroup of students will be attained by: one magnet school by the end of project year 1; three magnet schools by the end of project year 2; and all five magnet schools by the end of project year 3.

4.3: Science EAMOs or Safe Harbor criteria for the total population and for each subgroup of students will be attained by: one magnet school by the end of project year 1; three magnet schools by the end of project year 2; and all five magnet schools by the end of project year 3.

The following measures (4.4 & 4.5) address GPRA (U.S. Department of Education) Performance Measures (b and c): *The percentage of students from major racial and ethnic groups …who score proficient or above on State assessments in reading/language arts and mathematics.*

4.4: By the end of each project year, at each magnet school, the percentage of "All Students", students from major racial and ethnic subgroups, and low income students who score proficient or above for ELA will increase when compared with the previous year.

4.5: By the end of each project year, at each magnet school, the percentage of "All Students", students from major racial and ethnic subgroups, and low income students who score proficient or above for Mathematics will increase when compared with the previous year.

4.6: By the end of the third year of the grant (September 30, 2018), in at least four of the five project schools, students (total tested population) will have higher test scores than carefully matched students attending non-magnet schools in at least one subject area tested by New York State (ELA, mathematics, science). These results will be statistically significant.

4.7: By the end of the third year of the grant (September 30, 2018), in all five project schools, students in two or more of the tested subgroups (e.g., grade, a racial/ethnic group, low income students) will have higher test scores than carefully matched students attending non-magnet schools in at least one subject area tested by New York State, (ELA, mathematics, science). These results will be statistically significant.

4.8: By the end of the project period, 75% of students at each school will develop mastery of the magnet curriculum, as determined by project based assessments scored by rubrics.

Assessment: All students are tested in April of each school year. Data is analyzed by the State Education Department and made available to school districts. This data will be presented in the Annual Performance Reports in tabular form, highlighting the performance targets and how each magnet school – both in aggregate and by subgroups – performed in relation to these targets. Baselines are 2015 scores and indexes. PM 4.6-7 will be determined through a quasi-experimental analysis of New York State assessment (ELA, math, and science) scores. The study will meet the What Works Clearinghouse design standards for quasi-experimental studies. The study will be performed by UCLA's Center for Research on Evaluation, Standards, and Student Testing (CRESST). Dr. Joan Herman will be the principal investigator and Dr. Jia Wang will be

the co-principal investigator and project director. It is expected that there will be significantly higher scores in math at PS 120 for the grades that receive the professional development described in competitive priority 5. Project based assessments (performance measure 4.8) will be developed in year 1 for each grade by the magnet resource specialists and classroom teachers with the support of the magnet STEM/curriculum planner. Rubrics will be used in years 2 and 3 by teachers with a frequency to be determined by school planning team and be approved by the magnet project director. The baseline is zero for 2015-16 and will increase each year.

Purpose 5: *Improvement of the capacity of LEAs, including through professional development, to continue operating magnet schools at a high performance level after Federal funding…is terminated.* ***Logic Model Activities:*** *Professional Development (PD);* ***Benchmarks****: (a) PD supports all grant activities, uses expert presenters and a variety of delivery methods. (b) The sum of annual implemented and planned PD dosage attains target. (a and b checked during each site visit.) (c)At least 85% of teachers will agree with these survey items related to PD: (i) helped me integrate the magnet theme into lessons; (ii) deepened my content knowledge; (iii) helped me better maintain student engagement; (iv) I use what I learned from PD in my classroom;* **Objective 5.** Provide professional development related to Improvement of Curriculum, Instruction and magnet theme development and integration.

Performance Measures 5: By the end of each project year, at each magnet school, teachers will receive at least 50 hours of professional development (e.g., workshops, courses, coaching), in each of the following areas: **5.1** directly related to the improvement of curriculum and instruction including the development and implementation of the systemic reforms listed in the comprehensive education plan; **5.2** directly related to the development/integration of the magnet theme.

Other performance measures related to capacity building include: (2.1, 3.1) development and implementation of systemic reforms and magnet theme units and courses.

Assessment: Magnet resource specialists will collect professional development (PD) data including the type of training, the number of hours provided and the number of teachers involved and summarize it as it occurs and checked three times per year by the evaluator and project director. Attendance sheets and data, agendas, workshop materials and magnet resource specialist logs and schedules will be available at each school and checked by the project director. Similar information will be submitted for planned PD. The indicator is the number of hours of professional development per teacher per year. The target is 50 hours per teacher each year and 50 hours per teacher each year for each type of PD. PD will include workshop sessions, follow-up coaching (by magnet resource specialists), and teacher collaboration (e.g., PLCs, intervisitations). Quality will be determined through survey analysis, interviews and class observations. (Previously discussed in this section.) The 2015-16 baseline is zero. Each year, targets will be met and/or number of hours will increase to target.

Purpose 6: Ensuring that all students enrolled in the magnet school programs have equitable access to high quality education that will enable the students to succeed academically and continue with postsecondary education or employment. ***Logic Model Activities:*** *Parent Involvement and all other logic model activities;* ***Benchmarks****: The degree to which: (a) parent activities described in the proposal are being implemented; (b) all classes reflect the racial/ethnic composition of the school. (Items a and b be determined during each site visit.)* **Objective 6a:** All project school students will have equitable access to high quality education. **Performance Measure 6.1** By the end each project year, for each magnet school, at least 70% (yr. 1), 75% (yr. 2) and 80% (yr. 3) of classes (elementary grades) and STEM classes (middle grades), will reflect

their grade's enrollment for each racial/ethnic group (and gender for STEM classes) by ±15 percentage points. **Assessment:** Success will be determined by analysis of class enrollments disaggregated by race/ethnicity and gender. Please see assessment for measures 1.1- 1.5. Baselines are 2015-16 enrollments. The % of classes meeting the criteria increase each year.

Parent involvement also promotes equitable access to high quality education for all students. **Objective 6b:** There will be an increase in parent participation at each magnet school.

Performance Measure 6.2 By the end each project year, for each magnet school, there will be an increase (compared with the previous year) in the numbers of parents who participate in school activities. **Assessment:** Workshop materials, attendance records and parent interviews will determine parent participation and satisfaction. They will be collected by the magnet resource specialists as sessions occur and summarized and submitted to evaluators and the project director three times per year. The baseline year will be 2016-17. There will be an increase in the number of parents involved in school activities for years two and three.

Annual Evaluation Schedule: ► Initial meeting with project and district staff (Week 1); ► Refine data collection instruments and plan; refine analysis plan; (Weeks 1-3); Collect data (Throughout year): Enrollment data (Week 6); Documents collected (e.g. units integrated with magnet theme - Weeks 14, 28, 49); Site visits including interviews and observations (Weeks 15, 29, 50); Site Visit-Document Review Reports (Weeks 17, 31, 52); applicant pool data (Week 31); Dosage data (ongoing); Surveys administered (Week 33-35); Survey results reported (Week 40); ► Formative evaluation including discussion of recommendations (Weeks 3-50); MGI Report (Week 9); MGI/Applicant Pool Update (Week 31); ► Analyze and process summative data (Weeks 30-32 and 50-52); ► Prepare Annual Performance Report and Ad Hoc Summative Report (Weeks 30-32 and 50-52); ► Submit APR and Ad Hoc reports to school District (Weeks 33

and 52). Week 1 is the week the project begins each year. For the 2013-16 MSAP cycle, the project years were from October 1 through September 30.

Rigorous Evaluation of Magnet School Assistance Program

The rigorous evaluation design proposed below (please see appendix for a more detailed version) will be carried out by researchers at UCLA's Center for Research on Evaluation, Standards, and Student Testing (CRESST). The goal of this design is to measure MSAP impact on student academic achievement with the statistical rigor of a high-quality quasi-experimental design, but to do so with attention to limitations of available data and sample sizes, and to do it on a scale that is reasonable within the current funding structure. Specifically, we examine two broad questions: (1) How did students attending target MSAP schools perform on state tests in relation to matched students at comparison schools in the same district? (2) How did *different subgroups* of students attending these MSAP schools perform in relation to matched students at comparison schools in the same district?

This evaluation strives to bolster the current body of research with instrumentation and analytic methodology aligned directly with the priorities and selection criteria of the Magnet Schools Assistance Program. The research team will select comparison schools within the district based on how closely they match the characteristics of MSAP supported schools in the year prior to magnet implementation using hierarchical cluster analysis. Specifically, the comparison school selection will take into consideration the grade span of the school, school size based on enrollment, school racial composition (i.e., percentage of Black and Hispanic students), and the percentages of ELL students and NSLP participants, respectively.

To identify comparison students, the research team will first restrict the pool of MSAP and comparison students to those who had achievement outcomes for each outcome year and

may also limit the students to be at the same MSAP or comparison schools for a period of time. A covariate balancing propensity score will then be computed for the eligible comparison students. Comparison students will be matched to MSAP students with similar propensity scores using a technique known as radius matching (Huber, Lechner, & Wunsch, 2010).

Our research will examine the effect of MSAP implementation by comparing outcomes of students in MSAP schools to the counterfactual condition of how they would have fared if they had not been a part of the MSAP program. This effect is known in the literature as the average treatment effect on the treated (ATT). We will use regression analysis to examine this effect for each student's achievement outcomes. Specifically, we will examine the effect of prior student achievement on each student's achievement outcome (i.e., standardized tests) by controlling for prior achievement in both the matching model and the analysis model, which increases the robustness of the estimates. The average ATT effect is determined from the size and direction of the magnet effect coefficient. A counterfactual estimate can then be obtained by subtracting the ATT effect from the average observed score of an MSAP population in an outcome year. This counterfactual represents an estimate of how these students may have fared if they had not been a part of the MSAP program and had instead attended a control school.

The combination of the rigorous evaluation described above with data from surveys developed by CRESST and AES, and the evaluation site visits and documentation and data reviews by AES provides districts with additional insight into the extent and quality of their MSAP implementation as well as the value the MSAP program has added to its schools.