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Competitive Priority 1 – Need for Assistance

The proposed Project STEMInspired is necessary to accomplish the Minnesota state approved desegregation plan for Echo Park Elementary (EP) and Oak Ridge Elementary (OR) in District 196 (Rosemount-Apple Valley-Eagan, MN). In November 2014, both Echo Park and Oak Ridge were designated by the Minnesota Department of Education as racially identified schools. With having the highest level of concentration of minority students in the district, 56 percent of enrollment at Echo Park and 56.6 percent at Oak Ridge, Magnet Schools Assistance Program (MSAP) funding will be used to support the launch of two new magnet schools to reduce minority group (Black) isolation at these sites.

Elevating the educational equity at these two elementary schools is at the forefront of the Project STEMInspired initiative. Both schools are underperforming in reading, math, and science on state required assessments and have growing disportionalities in discipline for minority males. To provide more equitable access to knowledge and practices associated with Science, Technology, Engineering, and Mathematics (STEM) and 21st century learning skills will require detailed attention and changes to the approaches to instruction as well as the opportunities to learn. *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* (2012), supports changes toward more inclusive STEM learning environments when it states, "promoting scientific literacy among all the nation's people is a democratic ideal worthy of focused attention, significant resources, and continuing effort" (p. 277).

(a) The costs of fully implementing the magnet schools project as proposed;

District 196 is requesting $4,622,488.77 over the three year project period to fully establish and implement Project STEMInspired for Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental

and Health Sciences. The MSAP funds will be used to build the capacity of site-based leadership teams and teaching staff to use culturally responsive, evidence-based strategies to create innovative STEM learning environments for all students to grow and develop. To transform the cultures at the schools, both philosophically and physically, significant funds are needed for: coaching personnel, substitutes and stipends, contractual services, and specialized magnet-theme equipment and supplies to support inquiry-based teaching strategies and theme integration into the curriculum. Funds are also needed to raise student achievement and engage the community in supporting the increased racial and socioeconomic diversity (i.e. community partner liaisons, recruiting and marketing supplies, program evaluation, magnet learning summit supplies, field experience admission costs, and educational technology).

Table 1. Project STEMInspired Implementation Costs

Category	Year 1	Year 2	Year 3	Total Cost
Personnel	[redacted]	[redacted]	[redacted]	[redacted]
Fringe Benefits	$129,425.44	$123,761.85	$127,225.29	$380,412.58
Travel	$44,460.00	$44,460.00	$44,460.00	$133,380.00
Equipment	$40,000.00	$220,000.00	$5,000.00	$265,000.00
Supplies	$291,914.00	$632,263.00	$626,505.00	$1,550,682.00
Contractual	$134,950.00	$142,350.00	$134,950.00	$412,250.00
Other	$42,700.00	$17,500.00	$17,500.00	$77,700.00
Indirect Costs	$43,956.50	$59,860.30	$52,497.89	$156,314.69
Teacher Stipends	[redacted]	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]	[redacted]

To ensure genuine school reforms, the costs presented are reasonable and necessary to carry out the schoolwide projects. The cost per student impact across the multi-year project is $3,964.00. The majority of the costs included in Project STEMInspired are either one-time program expenses that will impact the magnet programming at the sites for many years or are directly linked to teacher professional development which will also have a long-term positive impact on student learning.

In addition to MSAP funds, District 196 will commit to utilizing the expertise of district-level administrators, specialists and trainers by allocating portions of their time to collaborate with Project STEMInspired school staff and students, thereby, using district resources. Non-MSAP funds will also be used to sustain commitments to transportation costs (i.e. daily transportation routes to magnet schools and field experience bus expenses) to build school facility additions for more space and safety, and to provide and compensate the classroom teachers and school administrators who will implement the systemic processes to increase achievement for all students.

(b) The resources available to the applicant to carry out the project if funds under the program were not provided; and
(c) The extent to which the costs of the project exceed the applicant's resources;

District 196 is a fiscally responsible school district. It is diligent in managing the district's finances and transparent in reporting financial information to the public. For 13 consecutive years, District 196 has been selected to receive the Certificate of Excellence in Financial Reporting from the Association of School Business Officials (ASBO) International. This award recognizes excellence in the preparation and issuance of the district's Comprehensive Annual Financial Report.

By combining a strong Finance Department with the experience of sustaining three existing elementary magnet schools for ten years, District 196 is fully aware of the substantial

funds required to implement two new elementary magnet schools. With magnet features such as extra STEM programs, theme-related personnel, increased technology and interactive media, and state-of-the-art learning spaces, magnet schools cost more to run than most other schools.

District 196 serves approximately 27,800 students in early childhood, K-12 and special education programs, and offers community education programs for residents of all ages. The cost of the magnet project greatly exceeds District 196's resources. Only with additional MSAP funds will there be the opportunity to achieve systemic reform at Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences. With 34 buildings, the district does not have the needed funds in place for professional development, travel, additional personnel, site visits, supplies, and innovative classroom redesign to inspire engagement, collaboration, and flexibility for the racially identifiable schools. Table 2 below shows the need for assistance, with the trend continuing through project year three:

Table 2. Magnet Implementation Costs Exceed District Resources

Echo Park Elementary Project Year 1	
New costs of implementing the magnet school as proposed *(new magnet programming + current staff and operating budgets)*	$1,318,484.09
District general operating funds available to the school	$801,152
Extent to which costs exceed building general funds	**-$517,332.09**
Oak Ridge Elementary Project Year 1	
Costs of implementing the magnet school as proposed *new magnet programming + current staff and operating budgets)*	$985,537.69
District general operating funds available to the school	$524,827.00
Extent to which costs exceed building general funds	**-$460,710.69**

Source: District 196 Finance Department

If funds under MSAP were not provided, the resources available to carry out the project would be extremely limited. For personnel working directly with the STEM magnet schools, District 196 could support one teacher on special assignment at each site. These teachers along with the District Magnet Steering Committee and the community partnership advisories would begin with small incremental changes in the schools and explore other grant opportunities.

The STEM programming and co-curricular opportunities would initially remain as is, meaning, there would be limited inquiry-based STEM learning implemented by a handful of committed classroom teachers. Professional development offerings and conference travel would be limited to building budgets, the District Integration budget and grants, with none to limited allowance for out-of-state travel. This limits exposure to innovative magnet schools outside of Minnesota. The number of technology tools at the schools would remain the same, making it unlikely to grow to a number that would close the digital divide by increasing technology literacy for all students. The classroom furniture and spaces would remain rigid and less conducive to supporting the paradigm shift necessary for 21st century learners and educators.

The schools would have access to Title 1 funds to support some interventionists and limited in-school professional development. The district integration budget, with money supporting secondary programs and all magnet transportation costs, would also have limited funds for stipends and substitutes for curriculum integration and professional development support. Grants and business partnership donations would be options for support, but based on past experience the amounts would most likely be small and inconsistent. Overall, the schools would need to work within the narrow funds of school budgets, in conjunction with district support, if and when it became available. This is significant because if past trends hold true, District 196 is projecting deficit spending in the years ahead due to flat revenues from the state. Table 3 below shows the deficit spending for last school year.

Table 3. Budget Deficit Spending for District 196

District 196 General Fund for SY 2014-2015			
	Revenues	Expenditures	**Variance**
General Fund	$322,337,249	$315,319,828	-$7,017.421
Echo Park Elementary for SY 2014-2015			
	Revenues	Expenditures	**Variance**
Operating Budget	$4,720,518	$5,745,081	-$1,024,563
Oak Ridge Elementary for SY 2014-2015			
	Revenues	Expenditures	**Variance**
Operating Budget	$4,121,032	$5,284,086	-$1,163,054

Source: District 196 Finance Department

(d) The difficultly 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 projects – e.g.; the type of program proposed, the location of the magnet school within the LEA- impacts the applicant's ability to successfully carry out the approved plan.

From rethinking and reforming the roles local employers and the community plays in student STEM learning, to creating new cultures that strongly encourage and enable all students to succeed, District 196 desires to bring innovative disruption to the two new elementary magnet schools. However, meeting the Project STEMInspired goals and objectives will require a significant expansion of District 196's existing efforts. The difficulties to effectively institute changes lie in ongoing inequities, which include: cultural differences, community, family income, family education, segregation, inadequate resources for rigorous STEM programming, and inconsistent or low expectations.

James Brown, executive director of the STEM Coalition in Washington, D.C. argues, "The strongest STEM programs don't necessarily require a hefty financial public investment in facilities and equipment. The number one ingredient, he said, is strong teachers able to inspire the scientists and engineers of tomorrow" (as cited in Catalanello, Solochek, & Ackerman,

2012). In just the area of professional development alone, the costs far exceed the funds available to the district to implement the Project STEMInspired vision of recreating a structure to allow for on-going and job-embedded professional development opportunities that will lead to lasting change in teacher paradigms and pedagogy. Currently sustaining four existing exemplary magnet programs (3 elementary and 1 middle level) along with 30 other building sites, it is financially impossible for District 196 on its own to support Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences to be more culturally responsive, intellectually challenging and joyous places for students from diverse groups.

The west and central corridor of District 196 is growing in diversity and socio-economic poverty. Along with changing student populations, both schools are experiencing several years of low achievement levels for numerous student groups. To aggressively build up the STEM learning opportunities at the new magnet sites and to attract and recruit a racial and socioeconomic diverse student population with growing student needs, including extra vulnerable youth, at the underperforming sites, and to provide for rising magnet transportation costs in a district covering 110-square miles, is daunting. As highlighted previously, the estimated costs to initiate and carry out the new STEM and Leadership programs and high-level project milestones at Echo Park and Oak Ridge are too substantial without the support of MSAP funds. District and building funds are insufficient for the transformational changes Project STEMInspired envisions for Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences.

Competitive Priority 2—See Table 6: New or Revised Magnet School Projects—Competitive Preference 2

Competitive Priority 3—See Table 5: Selection of Students—Competitive Preference 3

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

Projects that are designed to improve student achievement (as defined in this notice) or other related outcomes to supporting local or regional partnership to give students access to real-world STEM experiences and to give educators access to high-quality STEM-related professional learning.

Introduction

How do we create the next generation of innovators? Widely published author, Tony Wagner, addresses this urgent question in his book, *Creating Innovators: The Making of Young People Who Will Change the World.* In this writing, Wagner (2012) explores how to develop the capacities of many more young people to be creative and entrepreneurial, which studies cite are on the decline. The text indicates along with knowledge and creative thinking skills, motivation is needed for developing the capacities of young innovators. To enable students to become innovators, learning environments must shift to be hands-on, interdisciplinary, collaborative and allow for the cultivating of young people to have a real voice.

The proposed Project STEMInspired will create real-world experiences for young learners to engage directly in doing STEM. The grant outcomes in the district and school logic models (see Appendices A and B) of building capacity of staff and improving student achievement will be the result of second order change work of examining beliefs about teaching and learning and the kinds of learning environments that maximize growth. Research reveals schools have significantly better chances for achievement gains when improvement efforts address both how students should be taught and the collaborative culture in the school and classroom ("1st and 2nd Order Change," 2016).

Making philosophical changes will challenge staff to think deeply about their practice

and to adopt new ideas about their role in the classroom. As teachers become learners, the learning culture in the proposed schools will be transformed to promote diversity, increase choice and ensure students gain 21st century skills and STEM habits of mind. This new learning culture is what Wagner (2012) advocates for when writing, "For students to become innovators in the twenty-first century, they need a *different* education, not merely *more* education" (p. 201).

The Need

This *different* education promoted in Project STEMInspired is intended for two elementary schools that have been state mandated to desegregate. After community, staff, and parent engagement sessions and surveys on magnet schools, the school themes of Leadership, Engineering and Technology and Leadership, Environmental and Health Sciences were approved by the school board to help reduce minority group isolation and improve student achievement (See Appendix C). These STEM magnet themes will also address the need to inspire students to understand how the world works, see the rewards and challenges of STEM work and find purpose, passion and voice to make a difference in the world.

The increase in the number of STEM-focused schools is on the rise. Although many of the STEM schools are secondary schools, research cites the importance of sparking interest in STEM at an early age. Myers and Berkowicz (2015) point out:

> The ability to make a difference, close the gap, and have more high school students STEM ready require a sound beginning. So when elementary students and teachers are engaged with scientists, working collaboratively on a project or learning math through video games, they lead the system into a new place (p. 27).

In the Hanover Research report, *Best Practices In Elementary STEM Programs (2012)*, additional research confirms, "…early and repeated exposure to STEM subjects is essential for cultivating both future interest and future aptitude in STEM subjects" (p. 10).

An early and strong engagement in STEM subjects at the elementary level will encourage many students, especially girls and minorities, to become captivated, capable and confident in

their studies and will support the four major goals of STEM education as outlined by The President's Council of Advisors on Science and Technology (2010):

- Ensure a STEM-capable citizenry;
- Build a STEM-proficient workforce;
- Cultivate future STEM experts; and
- Close the achievement and participation gap.

The elementary schools in Project STEMInspired will implement STEM and Leadership magnet themes that are specific to the needs of local, state and national workforce levels. District 196 borders the thriving metropolitan area of Minneapolis and St. Paul, also known as The Twin Cities. STEM core industries of engineering, informational technology (IT), and health care are an important part of the state economy and in the last decade, STEM industries added jobs more than twice as fast as all industries in Minnesota ("Vital Signs," 2015). This trend is projected to continue between 2014 and 2024. STEM jobs in Minnesota will grow 13% while non-STEM jobs will grow 8% ("Vital Signs," 2015). Also, according to data from the U.S. Bureau of Labor Statistics (BLS), employment in STEM occupations nationally is projected to grow to more than 9 million between 2012 and 2022 (Vilorio, 2014, p. 3).

Although STEM-related career opportunities are on the rise, STEM businesses and local industry cannot find the STEM talent they need. Minnesota continues to have a gender gap in STEM-related degrees earned and women employed in STEM careers. There is also an increasing gap in the number of underrepresented minority groups pursing STEM degrees, specifically in the area of engineering ("Vital Signs," 2015). Growing the diversity of the STEM workforce by increasing the number of females and underrepresented minority groups trained in STEM fields will continue to be a local and national priority.

The Goal

Changing the STEM landscape will require meaningful efforts to inspire and recognize young inventors, researchers, designers and makers in all students. Project STEMInspired will increase access and engagement in rigorous STEM-learning experiences. It will allow young people to use science, technology, engineering and mathematics to improve their school, community and the world. The opportunity to learn, alone and as part of a collaborative community, allows students to find their voice and engage with learning in an active rather than passive way.

STEM learning is for all students, not just those who have a natural acclivity towards the sciences. It is for students with disabilities, students living in poverty, English learners, girls and students from racial and ethnic minority groups – all students. In today's technological world, it is essential students have a familiarity and comfort with science and math for everyday decision making, from consumer issues to health care choices. As our society increasingly depends on engineering and technology to solve practical problems, our students need to understand these fields. Project STEMInspired will be a building-wide magnet initiative at each site to educate highly diverse and creative STEM student experts.

The Plan

Instruction

To meet the goals of promoting STEM education, students will engage in inquiry-based instruction that offers real-world, relevant problem solving. This will include, but will not be limited to: citizen science projects, fieldwork experiences, engineering design challenges and integrated units of study. Throughout the day, classrooms will be facilitated by teachers who guide students to explore academic content by posing, investigating and answering questions. This inquiry-based approach will help students develop habits of mind that characterize a life-

long learner. When teachers implement an inquiry-based instructional approach, students are given opportunities to take ownership of their own learning and make connections to other content and their own lives, which can be particularly important for culturally and linguistically diverse learners (Center for Inspired Teaching, 2008).

With a focus on learning, the instructional strategies below are promising strategies for improving student achievement:

- Utilize a Multi-Tiered System of Supports (MTSS) process to provide quality core instruction to meet the individual needs of all students;
- Facilitate inquiry-based learning through integrated units of study infused with habits of mind, investigations and real-world problems;
- Build positive relationships with students and incorporate strategies for identifying student abilities, interests and strengths for engagement and leadership opportunities;
- Ensure instruction is aligned with state standards and regional STEM employment needs;
- Embed a variety of technologies into the instructional process; and
- Use assessment data to address learning gaps and opportunities for higher learning.
- Recognize the social nature of learning and shift the classroom environment to more collaboration rather than competition

Curriculum

When considering magnet programing, providing high-quality instruction and curriculum must be a focus in helping students reach challenging academic standards. The District 196's K-

5 Units of Study (Appendix D), aligned to state standards and designed using the Backwards by Design framework, will allow for an interdisciplinary approach to STEM learning and strategic performance assessments. Magnet cover pages will be created for each unit of study to document the unique magnet theme integration as well as technology integration and student digital workflows recommended by the District 196's Learning and Technology Framework (Appendix E).

The Units of Study will be taught in the context of schools implementing heterogeneous classes and block schedules to allow for several hours or possibly the whole day to implement innovative, integrated STEM learning. Coaches will support teachers' increased emphasis on math, science and reading in the core curriculum to prepare for more advanced coursework in the future.

One of the curriculum components supported by the coaches will be the implementation of interactive science notebooks. In an interactive science notebook, students take notes on the right side and respond to those notes on the left side. Interacting with their own learning provides active engagement for students, including English learners and as a result they have a stronger retention of information (Carter, Hernandez, & Richison, 2009). As a user-created text, the interactive science notebook is also an authentic assessment tool that can be used to adjust teaching and pinpoint areas for re-teaching.

When designing for STEM education, traditionally the emphasis has been placed on math and science. Project STEMInspired advocates the incorporation of more technology and engineering in the elementary curriculum. Each school will modify the engineering design process used in our middle school STEM magnet, a process modified from the engineering designs by Engineering is Elementary developed by the Museum of Science in Boston, and our state engineering museum, The Works Museum (See Appendix F for an example).

The study of robotics and coding will be included at all grade levels in addition to the everyday uses of the engineering design process. Rockland et al. (2010) explain, "The design, construction, and control of the robots by the students contribute to the learners' acquisition of knowledge and the refinement of their thinking skills regarding scientific, engineering design, and information technology" (p. 4). This extra emphasis on coding and robotics will encourage students to apply science and math contents and link them to technology, problem solving and design.

Each school will have a makerspace, a laboratory for inquiry-based learning where students participate in hands-on projects that allow them to explore and experiment with new ideas and experience new technologies. Learning in a makerspace is a personal endeavor where students, rather than teachers, initiate the learning process. Students become self-directed learners when they define and control their own projects. The environment is designed to cultivate curiosity, encourage playfulness, motivate learning and celebrate innovation.

A unique lab space for each of the magnet schools is being designed where classes can test their theoretical knowledge about the physical world through hands-on exploration. The labs will be well-equipped, flexible spaces for student participation in real-world applications of STEM.

Available technology tools will allow for student individualization and innovation in learning and sharing ideas. Examples include, but are not limited to: video-conferencing with institutions such as NASA to bring space science investigations into the classrooms; 3D printers and laser engravers to construct students' original ideas; measurement tools to apply concepts of levers, forces and movement; and wearable technologies such as heart-rate monitors to project each student's heart rate onto the gym wall so students can spend most of their time within each heart rate zone and can collect real data to analyze in the classroom.

Authentic or problem-based learning will be embedded into the units of study. Being aware of what is going on in the community, making use of the opportunities offered by the informal learning organizations such as the Minnesota Zoo, Ag in the Classroom, and Valley Natural Foods, establishing outdoor learning spaces on campus and using the community for field studies, will provide students with real-world STEM experiences. Inviting professionals to contribute their expertise to the student inquiries (i.e. Burnsville Water Department personnel share how the stormwater system and the sewer system have been engineered in our community; Dakota County Naturalists explain their campaign to eradicate garlic mustard from the parks and train students to identify and pull the invasive species) gives purpose and action to the curriculum.

In addition to enhancing content knowledge and digital fluency, STEM education cultivates essential noncognitive skills through scientific inquiry, habits of mind and engineering design. By focusing on collaboration, communication, creativity, critical thinking, problem solving and additional growth mindsets such as persistence, Project STEMInspired seeks to build STEM literate leaders.

To assist in the process of teaching students the skills needed for academic success, each school will adopt the *Leader In Me* best practices based on the content from *The 7 Habits of Highly Effective People* (Covey, 1998). The *Leader in Me* (Covey, Covey, Summers, & Hatch, 2008) paradigm, by FranklinCovey, sees every child as capable and every child as a leader. Teaching 21st century leadership and life skills to students will create school cultures of student empowerment. The use of the common language of the habits will impact everything – instruction strategies, curriculum, school culture and extended learning events.

To showcase these learning and leadership opportunities, learning summits will be developed. A learning summit will be designed by teachers and students to highlight learning

from a specific unit of study and will include parent and community guests as well as opportunities to further explore topics of interest that require extended time or unique equipment and tools (see Quality of Project Design). Overall the curriculum implemented for improving student achievement will:

- Integrate the magnet theme into existing curriculum/units of study;
- Implement 21st century learning and STEM habits of mind through the *Leader in Me* principles;
- Continue to align to state adopted standards and District Learning and Technology expectations;
- Connect to real-world contexts and careers in STEM fields, aligned to regional needs; and
- Infuse guest speakers, field investigations and application of concepts.

Space

The integrated magnet curriculum will be enhanced by access to innovative spaces, field studies and extended learning opportunities. Designing STEM learning experiences with a diverse audience in mind, Project STEMInspired acknowledges the need to allow for play and exploration, development of spatial skills and 21st century skills and STEM habits of mind.

District 196 is adding space to each of the proposed magnet spaces to assist in the reduction of minority group isolation and to promote magnet theme program goals. The district-sponsored construction will begin in the fall of 2016 and will include 4 classrooms and 1 flexible learning space per school. Spaces to cultivate curiosity, discovery and leadership development can be found in Table 4.

Table 4. Magnet Themed Spaces

Echo Park (EP)	Oak Ridge (OR)
Makerspace in Media Center to build inquiry skills, foster creativity and prepare students for flexible and strategic thinking.	Makerspace in Media Center to build inquiry skills, foster creativity and prepare students for flexible and strategic thinking.
Innovation Station for a flexible learning space in the school with specialized supplies and mobile furniture for engineering challenges, scientific investigations, and STEM learning summit showcases.	Ology Lab for a flexible learning space with specialized supplies and mobile furniture for engineering challenges, scientific and health investigations, and STEM learning summit showcases.
Nature Play Area to emphasis engineering and design principles and to encourage students to make STEM a part of everyday life.	Nature Play Area to emphasis nature study and identifying relationships and systematic connections so students take STEM learning out of the classroom and into the "field".
Broadcasting Studio for student projects, communication and leadership opportunities and Geek Squad Jr mobile space for IT student leadership.	Outdoor Gardens for Urban Farming and multiple outdoor classroom spaces to offer ample opportunities to follow the students' lead.
Flexible furniture in classrooms for inquiry-based learning (Ex. tables on wheels for mobility and cooperative group learning).	Flexible furniture in classrooms for inquiry-based learning (Ex. tables on wheels for mobility and cooperative group learning).
Accessible storage cabinets and bins for STEM manipulatives in classrooms and community spaces (ex. Innovation Station).	Accessible storage cabinets and bins for STEM manipulatives in classrooms and community spaces (ex. Ology Lab).

Extended Learning

An effective STEM program also allows opportunities for learning outside of the classroom through afterschool programs, clubs, Saturday learning opportunities and competitions/projects. School staff and local community experts will help facilitate these opportunities. The afterschool enrichment programs will include STEM classes such as EiE's Engineering Adventures and CoderDojo, a wide array of Community Ed class options, diversity classes requested and supported by the Community Partner Liaisons and parents, LEGO and robotics clubs and citizen science projects. Our students will also participate in off-campus STEM programs such as Girls Excel in Math at the University of Minnesota, the Society of Women Engineers WOW! Day at Normandale Community College and special events at the Science Museum of Minnesota. The schools will host exciting summer programs that engage students in authentic learning opportunities. These out-of-class activities are particularly important for minority groups, such as girls, African-American, Hispanic and Somali students who are underrepresented in STEM. Reports indicate, "As early as elementary school and middle school, many students from these groups begin to think that they will not or cannot excel at STEM" ("President's Council", 2010, p. 88). Learning STEM in informal settings where collaboration and play are key components assures all learners that they are capable and successful STEM thinkers.

The proposed extended STEM learning will be developed on the following principles:

- Partner with community education to provide STEM learning opportunities in the afterschool setting;
- Align curriculum and schedules to allow for learning activities to continue outside the school day; and
- Include parents and the community in extended day learning opportunities.

STEM Collaborative Partnerships

When designing the integrated curriculum and extended day learning opportunities, Project STEMInspired utilizes community assets. For example, District 196 is one of 24 recipients in the nation for the Youth CareerConnect through the US Department of Labor and Department of Education. Through the design and second year of implementation of this grant, E3 STEM, premier regional business and industry partnerships enable secondary learners from Apple Valley High School to engage directly in doing STEM. The grant initiative promotes collaboration among students, staff and businesses to provide authentic and relevant learning experiences to lead to more students better prepared for their futures. The businesses and higher education institutions on the grant advisory developing this work are invested in promoting STEM education and are eager to support Project STEMInspired for early learners in STEM.

These local colleges and universities as well as businesses, organizations and industry, are committed to developing the magnet programs to educate and inspire tomorrow's scientists, engineers and mathematicians. Due to the fact that District 196 currently partners with regional and state STEM professionals, the proposed project will build on the success of these win-win partnerships by collaborating to:

- Work with teachers to create real-world problems based on units of study themes and provide classroom support as resident experts;
- Engage in supporting staff and students in the development of learning summits, STEM learning spaces, and field study experiences;
- Provide tours and internships for teachers to gain awareness of STEM-related careers;
- Provide resources and materials for authentic STEM learning experiences;
- Promote the magnet achievements within the community; and

- Participate with afterschool programs to improve STEM learning activities.

Building Capacity

In addition to common instructional techniques, strong curriculum, extended day learning opportunities and building community partnerships, Project STEMInspired will also invest in:

- strong leadership,
- professional capacity among staff, and
- a student-centered learning climate.

Although curriculum materials and instructional strategies are necessary, effective professional development is vital for meeting the goals and objectives of Project STEMInspired. Access to high-quality STEM professional development will come through restructuring site instructional leadership teams, developing strong professional learning communities (PLCs) and fostering trust (Appendices A and B). The instructional leadership teams and grade level PLCs will develop a shared mission and vision, high expectations for students and structures for collaboration and PLC time aligned with magnet objectives and performance measures (Appendix G).

Staff members will also participate in multi-day magnet bootcamps during the summers as well as theme seminars during the school year, focusing on: equity, inquiry, interdisciplinary units of study, technology integration, collaborative structures, 21st century skills and STEM habits of mind. There will also be strategic district-led leadership sessions designed specifically for principals and teacher leaders who are expected to lead the magnet effort forward.

Through these various structures, teachers will increase their understanding of the process of scientific inquiry as well as the engineering design process. Although both focus on asking questions and answering them, incorporating engineering principles and design concepts into curriculum and standards requires new knowledge and changes in classroom instruction.

Regular instructional coaching and planning directly with community experts will also build the capacity of teachers to teach with an integrated STEM approach (See Quality of Project Design).

Avery and Reeve (2013) support the proposed model for job-embedded professional development in addition to learning opportunities over a period of time when pointing out:

> In developing STEM PD, it is important to note that teachers will be unique with respect to their educational environments, backgrounds, and experiential knowledge. This means that a one-size-fits-all model will not be conducive to preparing a diverse group of teachers with the necessary knowledge, skills and abilities to deliver STEM education to their students (p. 67).

To provide the needed individualized support, each school will have a magnet teacher on special assignment and additional coaching support in Multi-Systems of Support (MTSS) and STEM (with an emphasis in math) to serve as mentors for the teachers. These roles are in alignment with The President's Council of Advisors on Science and Technology (2010) recommendation that elementary schools have at least two resident STEM experts to serve as leaders for other teachers. Instructional, student-centered coaching will encourage teachers to explore best practices and integrate relevant STEM topics into their classroom teaching and curriculum materials. Coaching will be essential to promoting STEM education and improving student achievement because as Tschamnen-Moran & Tschamnen-Moran (2010) explain, "it is a process that brings out the greatness in people. It raises the bar of the possible so people reinvent themselves and their organizations" (p. 5). This is exactly what STEM magnet schools want.

Competitive Priority 5 - Supporting Strategies for which there is Evidence of Promise

Applicants are encouraged to provide evidence of promise responses that specify the intervention(s) in the study or studies that it plans to implement, the findings within the citations that the applicant is requesting to be considered as evidence of promise including page number(s) of specific tables if applicable. The Department will not consider a study citation that an applicant fails to clearly identify for review.

Literacy Collaborative (LC) and Reading Recovery® Studies Showing Evidence of Promise

Biancarosa, G., Bryk, A. S., & Dexter, E. (2010). Assessing the Value Added Effects of Literacy Collaborative Professional Development on Student Learning. *Elementary School Journal*, 111, 7-35.

This multi-cohort, longitudinal quasi-experimental design study researched teacher and student growth through the implementation of the Literacy Collaborative (LC) Multi-tiered Systems of Support (MTSS) model. The LC restructures educational delivery into a data-driven instructional model based on continuums that align with the Common Core Standards to assure that all students are college and career ready by the time they graduate. LC mirrors the literacy practices of New Zealand, Australia and other high achieving countries studied in the international benchmarking study for the Common Core Standards. In this model, the word "literacy" does not mean just reading and writing. Reading and writing are tools of literacy. This model focuses on developing critical thinkers with strong leadership skills who collaborate through research to find the answers to critical questions through integrated inquiry units of study. A primary focus of the LC is to develop 21st century teachers and leaders who facilitate the learning of 21st century students.

Within the study, a no-treatment period of one year provided baseline data on student achievement for each school and classroom prior to program initiation. Because this study did not consist of a randomized control trial, if reviewed by the What Works Clearinghouse (WWC), this study could meet the WWC evidence standards with reservation.

Biancarosa, Bryk, and Dexter (2010) conducted this study through funding from the Institute of Education Sciences (IES) of the U.S. Department of Education to follow teacher and student growth over four years in 17 LC schools across eight states. A copy of the study published in the *Elementary School Journal* can be found in Appendix H.

The results of this study show significant gains in student literacy learning beginning in the first year of implementation and increasing over subsequent years (see Table 5).

Table 5. Literacy Collaborative Student Performance Improvement
Biancarosa, G., Bryk, A., & Dexter, E. (2009). Assessing the value-added effects of coaching on student learning. *Final report to the Institute of Education Sciences* (IES).

Student Performance Improvement First 3 years of Literacy Collaborative Implementation			
	Year 1	Year 2	Year 3
Average value-added (overall)	.164	.280	.327
Performance improvement	**16%**	**28%**	**32%**
Effect size	.22	.37	.43

The analyses also indicated that results persisted across summer periods where historically students experience regression. In the LC model, coaches are involved in a full year of professional learning prior to working with teachers. "In addition, coaching in the LC model is organized around a detailed and well-specified literacy instructional system that includes a repertoire of instructional practices" (Biancarosa et al. p. 28). The reading theory serving as a foundation for these instructional practices is that of balanced literacy and meaning-based literacy acquisition (Clay, 1979, 2001).

According to Biancarosa et al. (2010), "The final study sample included 4 years of data amounting to 27,427 observations, 8,576 students in 17 schools, located in eight states across the eastern United States. During the course of the study, students attended 287 teachers' classrooms" (p. 12). The schools varied widely in student composition. See Table 6 for demographics.

Table 6. Percentages of Key Demographics of the Student Sample in the Base Year

		School																
Characteristic	Overall	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Low income	46.0	47	33	20	35	36	19	49	38	60	50	60	73	43	45	50	86	38
Race/ethnicity:																		
African American	15.5	3	31	30	1	7	20	1	1	41	3	1	50	0	35	0	36	4
Latino	5.8	31	8	12	2	20	4	0	3	2	1	0	6	0	4	0	4	2
Other	7.2	5	10	11	2	1	15	0	1	28	2	0	29	12	0	3	0	3
White	70.6	61	51	47	95	72	54	99	95	21	94	99	15	88	61	97	60	91

Note.—Racial ethnic group percentages may not total 100% due to rounding.

Informed by the evidence of promise, this project proposes the addition of an MTSS coach at each magnet site. District 196 LC currently trains one MTSS coach per elementary school across the district, with two coaches only in the largest schools that have more than 40 classroom teachers. The additional coach will focus on the primary grades (K-2) in order to accelerate and advance the efficacy of teachers within the LC model and advance the literacy learning of all students. Echo Park Elementary School of Leadership, Engineering and Technology currently has 72 licensed staff including 33 classroom teachers, with 18 teaching kindergarten, first and second grades. Oak Ridge Elementary School of Leadership, Environmental and Health Sciences currently has 55 licensed staff, with 28 classroom teachers, from which 15 teaching kindergarten, first and second grades. LC suggests one coach for up to 12 teachers to achieve a strong implementation. Within Project STEMInspired, the addition of a primary MTSS coach will provide for partnership with the school's current coach for professional development, shared leadership and substantially more individual coaching sessions with primary teachers.

May, H., Gray, A., Gillespie, J.N., Sirinides, P., Sam, C., Goldsworthy, H., Armijo, M., & Tognatta, N. (2013). Evaluation of the i3 scale-up of Reading Recovery year one report, 2011-12. Philadelphia, PA: Consortium for Policy Research in Education. Full study can be found here: http://www.cpre.org/sites/default/files/researchreport/1488_readingrecoveryreport.pdf

This study meets WWC group design standards without reservations. This study examined the Year 1 impacts of an Investing in Innovation (i3) scale-up of *Reading Recovery*®, a one-on-one, daily, 30-minute intervention for students reading below grade level in the first grade. According to the U.S. Department of Education, WWC review of the study (2014, October), "The study authors found, and WWC confirmed, that *Reading Recovery*® had a significant positive impact on the general reading achievement of struggling readers in the first grade. . .and statistically significant positive impacts in the general reading achievement and reading comprehension domains" (p. 2).

The proposed project will utilize the LC MTSS model including the intervention of *Reading Recovery*® as part of Tier 2 for first graders. The highly trained and coached *Reading Recovery*® teachers will deliver 30-minute pull-out sessions where students participate in one-on-one reading, writing and word study targeted and intensive instruction. Ongoing progress monitoring provides data necessary to inform targeted instruction and to enable the *Reading Recovery*® teacher to tailor instruction to the individual needs of students. Students participate in the intervention until they reach average level for their grade, typically in 12 to 20 weeks. If after 20 weeks the child is not yet at average grade level, the student is referred for further evaluation and targeted instruction.

628 schools participated in the study in which 209 were randomly selected to participate in the randomized controlled trial in the first year of the study. Of the 209 randomly selected schools, 158 completed the random assignment of students to the intervention and comparison groups. Four matched pairs of students were formed at each school. The intervention group received *Reading Recovery*® while the comparison group received normal classroom instruction

during the intervention period. Table 7 shows the demographics of the analytic sample. *Reading Recovery*® teachers receive a week of training in the summer to learn how to administer, interpret, and score the Observation of Early Literacy Achievement as well as engage in 3 hours a week of ongoing training and periodic coaching provided by a *Reading Recovery*® teacher leader.

Table 7. Demographics of Analytic Sample from Evaluation of i3 Scale-up Reading Recovery Year One Report

Analytic Sample Group	Male	Female	English Learners	White	Hispanic	African-American	Other Race
Intervention	61%	39%	17%	57%	22%	18%	3%
Comparison Group	61%	39%	18%	56%	20%	19%	5%

The Literacy Collaborative as School Reform Model in District 196

District 196 has partnered with Lesley University and LC to build a transformational Multi-Tiered System of Support (MTSS) model with a focus on building the capacity of learners of all ages and closing achievement and performance gaps. District 196 provides teachers with information, tools and supports to enable teachers to meet the needs of each student and sustainably accelerate and deepen each student's learning. This is accomplished through establishing standards-based, aligned curriculum and an assessment system.

The District 196 Literacy Collaborative is a capacity-building model that allows for the formation of a complex, cognitive-processing system in every individual learner, beginning in pre-K and flowing through to adult learning. The theory for developing the complex, cognitive processing system is founded upon the theories of Marie Clay and *Reading Recovery*®. Every person in the child's learning life has the same goals, language and vision of possibility and growth Pre-K through 12, based on the Minnesota Academic Standards for ELA (Common Core

State Standards). The system for thinking, laid in PreK-K, strongly develops capacity for thinking in grade one and deepens the thinking in grades two through six. There is less time spent laying a new learning foundation each year, more time spent interconnecting grade levels, which allows for the building of a more complex thinking system over time. This model is grounded in genre-led integrated inquiry units of study. Genre units include both fiction and nonfiction. Nonfiction informational units integrate content standards. All units identify learning targets with published learning goals and performance assessments that monitor progress and inform differentiated instruction. Each unit is based on a synthesis of the and Pinnell Continuums of Literacy Learning (2006) and the Common Core Standards Continuums. Each learner has an individualized learning plan that is monitored by an online tool called North Star Educational Tools (NSET).

Magnet School Logic Model

A primary component for the successful implementation of the Literacy Collaborative as a school-wide reform model relies on the one-on-one coaching of teachers to make data informed decisions to improve and accelerate student literacy learning. Currently, Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences, each have one MTSS coach PreK-5. Upon reviewing the research of Biancarosa et al. (2010), Project STEMInspired will add a primary MTSS coach focusing on K-2 at each new magnet school. Within the school level logic model (Appendix B), the recruiting, hiring and training of a primary MTSS coach is included.

Desegregation

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

Introduction

On November 10, 2014, the Minnesota Department of Education notified District 196 personnel that Echo Park Elementary (EP) and Oak Ridge Elementary (OR) qualified as racially identifiable schools as defined by the Minnesota Rules 3535.0110 Subdivision 6 ("Minnesota Legislature", 2015), having 20% or more students of color than the district average at the elementary level. The desegregation rule states schools and communities must work together to design and implement "educationally justifiable, effective, voluntary strategies that provide meaningful choices of integrated learning environments for students and their families". To develop the Achievement and Integration Plan required for each school, community input was gathered on integration strategies that would reduce their racial isolation. The main research-based strategy chosen to address the rule was the development of theme-based magnet schools that offer choice and innovative instruction and utilize voluntary measures to address racial and socioeconomic segregation at the two schools.

With community support, an approved plan from the Minnesota Department of Education and endorsement from the local School Board, Echo Park Elementary and Oak Ridge Elementary will transition to new magnet schools to provide equal educational opportunities to minority neighborhood students attending these sites and to provide more diverse learning environments for all students. The results of a community, staff and parent survey and numerous engagement sessions guided the magnet theme selection at each site. Echo Park Elementary, located on the district's west-side border is very close in proximity to the District 196's K-12 STEM Pathway: Cedar Park Elementary STEM School (CP), Valley Middle School of STEM (VMSS) and Apple Valley High School (AVHS). Due to a long wait list for the elementary STEM program at Cedar

Park Elementary, the strong popularity of STEM and Leadership magnet themes in the community input and the closeness of Echo Park to the STEM Pathway schools, Echo Park Elementary will be Echo Park Elementary School of Leadership, Engineering and Technology.

Oak Ridge Elementary is located in the north central section of the school district. It is in close proximity to the district's School of Environmental Studies (SES) – a choice high school for 11th and 12th graders located on the property of the State of Minnesota's Minnesota Zoo. The school offers authentic learning experiences central to its mission to "be a community of leaders learning to enhance the relationship between humans and their environments" (SES, 2016). SES immerses students in the study of environmental topics and issues working with and alongside professionals in the field. Oak Ridge is also located in the same part of the district as Glacier Hills Elementary School of Arts and Science (GH), an existing magnet program with a long wait list of students each school year. Due to the popularity of the STEM, leadership and environmental science magnet themes from the community, long wait lists for the elementary STEM programs at Cedar Park and Glacier Hills, the proximity of Oak Ridge to SES, and the growing health care industry in the region, Oak Ridge will be Oak Ridge Elementary School of Leadership, Environmental and Health Sciences.

Demonstrated Success

District 196 has proven success in reducing racial isolation with magnet programs. In 2007 Cedar Park Elementary and Glacier Hills Elementary were classified as racially identifiable schools under the state's Desegregation Rule. Through a 2007 Magnet Schools Assistance Program (MSAP) Grant, three elementary magnets, Cedar Park Elementary STEM, Glacier Hills Elementary School of Arts and Science, and Diamond Path Elementary School of International Studies (DP), were developed. The schools have been successful in improving the racial, ethnic and socioeconomic balances in the schools' student populations. By exhibiting an ongoing

commitment to the original MSAP goals, all three magnet programs have received national and state recognition for exemplary magnet programming – reducing and eliminating racial isolation, boosting academic achievement and sustaining innovative community partnerships. Cedar Park and Glacier Hills are no longer racially identifiable schools and Diamond Path now mirrors the demographic changes seen in the district's elementary schools (see Tables 8-10).

Table 8. Student Minority % at Existing Magnet Schools

% Minority						
Existing Magnet School	**1999-2000**	**2002-2003**	**2005-2006**	**2008-2009***	**2011-2012**	**2014-2015**
CP	28.00%	31.34%	49.83%	54.25%	53.35%	56.37%
DP	11.50%	8.10%	13.43%	20.94%	26.18%	34.41%
GH	26.20%	34.27%	35.35%	40.00%	44.87%	50.00%
Elementary District Average	9.50%	13.65%	17.63%	21.61%	26.35%	36.71%

**Note: Magnet schools began implementation in the 2007-2008 academic year.*

Table 9. 2015-16 Economic Indicator - %F/R at Existing Magnet Schools

Existing Magnet School	2015-16 Economic Indicator - %F/R	
	Attendance Area Only Students	**Total Enrolled Students (includes magnet)**
CP	50.50%	44.30%
DP	22.30%	20.70%
GH	34.08%	23.70%

Table 10. Reversing declining enrollment at Existing Magnet Schools

Enrollment Data of Existing Magnet Schools			
Year	**CP**	**DP**	**GH**
Fall 2005	581 students	532 students	386 students
*Fall 2007**	*539 students*	*612 students*	*471 students*
Fall 2009	590 students	690 students	578 students
Fall 2011	671 students	743 students	611 students
Fall 2013	705 students	761 students	695 students
Fall 2015	696 students	805 students	762 students

Recruiting a Diverse Student Body

The comprehensive outreach, marketing, and recruitment plan established during the implementation of the first elementary magnet programs has been reviewed on an annual basis. With the guidance of a marketing consultant, the District Magnet Leadership Team and additional school meetings, the existing district recruiting and marketing plan was used as an outline for developing the recruitment efforts for the two new magnet programs.

District School Choice

With 34 sites, District 196 has established policies and procedures for school choice. Transferring from one school to another nonmagnet school within the district follows intradistrict transfer policies. Elementary school students may request a transfer to a nonmagnet school for the following situations: daycare, intent to change residency and parent/guardian request. There are clear steps to open enroll students out-of-district, first of which is completing a state enrollment options application. Deciding to enroll a student in a magnet school also follows a clear, consistent application process from year-to-year. The two proposed magnet schools are joining this established school choice process. District 196 currently has three elementary schools and one middle school magnet program. Established practices are in place such as the mailing of a School Choice Catalogue to all incoming kindergarten families, Spotlight on Magnet School events, and School Choice community information nights with language interpreters and daycare options.

These established practices will help in the recruitment of students to the new magnet programs because community members look for and expect to find school choice options for their children. From the community survey and engagement sessions, parents indicated they were interested in more magnet programs and of high interest were the themes of STEM,

Leadership and Environmental Science. With the highest community interest themes, Echo Park and Oak Ridge magnet programs will attract students of a diverse population.

Marketing and Recruiting

As an organization, District 196 believes racial and socioeconomic integration promotes better outcomes for all students. This has been demonstrated in the fact that both Cedar Park and Glacier Hills' test scores have shown steady growth. This belief has been supported by ongoing development and financial support for customized, high-quality marketing materials, translation services of printed and online materials and consultant contracting to ensure promotional materials are growing the programs. To help raise parent awareness of the two new elementary magnet program options and to support targeted recruiting for the lottery pool, the following strategies and tactics will focus on the need to strengthen the schools' branding infrastructure and develop a comprehensive approach to relationship marketing by addressing these areas: consistency, visibility, relationships and vision. Guided by these principles, four main strategies will be implemented for recruiting students from different social, economic, ethnic and racial backgrounds into the magnet schools. District and site level staff, students and parents, and community partners will collaborate to provide the following recruitment support in Tables 11-14 which demonstrate strategies for marketing and recruiting a diverse student body.

Table 11. Recruiting Strategy 1--Scream the Theme

Implementation of Tactics	**Year 1**	**Year 2**	**Year 3**
Develop one logo for each school that reinforces the magnet theme and is used consistently.	X		
Select a set of colors and symbols for each school and use them consistently (in print materials and online) reinforcing the magnet themes.	X		
Use key messages and consistent easy-to-understand information about magnet themes and enrollment process in all materials and online and translate into multiple languages	X	X	X
Produce a short (3 minute) video for EP and OR with student, parent and staff testimonials that can be used at events and posted online.	X		
Utilize social media: Develop Twitter feeds and update Facebook pages regularly. Add Facebook and Twitter icons on all materials and online.	X	X	X

Table 12. Recruiting Strategy 2--Build Relationships with Target Audiences

Implementation of Tactics	**Year 1**	**Year 2**	**Year 3**
Offer in-person family experiences and tours throughout the year, with extra options and promotion during "school choice time" of November-January. Provide translators during advertised events.	X	X	X
Host regular Magnet Theme events that bring in prospective families, partners and current families.	X	X	X
Each year, develop an online and mailing database for EP and OR (targeted preschool families). Send them emails about various school events and twice yearly "Did you know?" about cool magnet-related news at the school with an invitation to tour anytime.	X	X	X

Table 13. Recruiting Strategy 3--Develop Awareness, Pride and Excitement

Implementation of Tactics	**Year 1**	**Year 2**	**Year 3**
Every month, submit one or more magnet-related story ideas to the local media.	X	X	X
Create simple checklists and samples of what STEM and Leadership themes mean and how it's incorporated into the day. Post online and have available at events.	X	X	X
Create short video vignettes with students and parents telling a story about their experiences with STEM and Leadership at their school.	X	X	X
Bring staff from each STEM magnet school to the other STEM magnet schools to tour.	X		
Develop a list of magnet pride points for each school and use them as appropriate in print and online materials.	X	X	X
Develop a simple brochure/fact sheet for each school and for the all magnet schools that is used consistently and builds each school's visual brand and connects it to the STEM Pathway and District 196.	X	X	X
Post school overview videos on social media and District 196 TV.	X	X	X
Have EP and OR school representatives be visibly present at appropriate school or district events. Create an "on the road" kit with materials, messages and tools for an effective presentation/presence.	X	X	X
Present information about EP and OR at targeted preschools and elementary school PTOs each fall.	X	X	X

Table 14. Recruiting Strategy 4--Empower Magnet Leaders at the School Level

Implementation of Tactics	**Year 1**	**Year 2**	**Year 3**
Have school and district leaders set the tone, vision and culture of the schools with common language and support about STEM and Leadership opportunities and advantages.	X	X	X
Create and train a school ambassador team at each school composed of staff, parents and students – have them respond personally to all inquiries, lead tours, be present at events and meet regularly to brainstorm ways to promote the school. Identify one staff member to lead these efforts.	X	X	X
Keep all staff aware of and engaged in magnet marketing efforts; reinforce magnet messages with staff at staff meetings; and celebrate positive changes/efforts.	X	X	X
Have leadership teams identify early adopters of change as magnet staff champions to energize and share ideas with other staff.	X	X	X
Use consistent grant data sources/points to help track enrollment efforts over time and identify areas that need extra attention and areas where efforts are paying off.	X	X	X

Lottery System

All of District 196 elementary magnet schools will offer families increased choices for learning while helping the district achieve state-required integration goals. The lottery system seeks a socioeconomically diverse student enrollment by giving preference to applicants from non-Title I schools. Any elementary-age student who lives within District 196 has the

opportunity to apply for enrollment in any of the magnet schools. Non-resident students may also apply, but will only be considered after applications of students residing in District 196 are processed. District 196 provides a fair and open process for enrolling students in the magnet schools. Each year the district magnet team publishes the timeline and process for application and selection, posting them on all school websites, in the newspapers and on all created marketing materials. District-level magnet and technology personnel administer the application and selection process, with final approval from the superintendent (see Table 15).

Table 15. Lottery Provisions

Phase	Enrollment	Cedar Park STEM School	Diamond Path School of International Studies	Echo Park School of Leadership, Engineering, and Technology	Glacier Hills School of Arts and Science	Oak Ridge School of Leadership, Environmental and Health Sciences
1	Attendance Area	Students residing in the attendance area of a magnet school				
2	Magnet Application	Siblings of current magnet students who reside in the district but live outside the magnet school attendance area				
		Cedar Park, Diamond Path, Echo Park, Glacier Hills and Oak Ridge attendance area students applying for a magnet school other than their own				
		Non-Title District 196 attendance area applicants		Non-Title District 196 attendance area applicants		Non-Title District 196 attendance area applicants
		District 196 residents				
		Siblings of current magnet school students who do not reside in District 196 (transportation not provided)				
		Non-district residents (transportation not provided)				

Transportation

Due to the size of District 196 (110 square-miles) there is enough socioeconomic diversity within the boundaries to reduce minority group isolation at the Project STEMInspired

schools. To eliminate the geographical barrier to integrating the magnet schools, free transportation is provided to all students accepted into the K-8 magnet programs.

In conclusion, popular magnet themes, an established system of school choice, strategic marketing, no academic examination for student selection and free transportation show a demonstrated commitment to shift current enrollment patterns. The process will be continually monitored and aligned to the grant's desegregation and choice long-term outcomes (see Table 16).

Table 16. Desegregation and Choice Outcomes

Outcome	Minority group isolation (MGI) is reduced	Increased number of applications
Indicators	Increased enrollment of target subgroups	Number of applications
Measure of Change	Decrease in percentage of identified group in total enrollment	Number of applications increase annually
Data Collection Methods	OCR Enrollment Tables for target schools & District	District reports on number of applications
Data Sources	District data office	District MSAP magnet office
Frequency of Data Collection	Annually – with multiple checks on demographics of applicant pool throughout the applicant period	Annually – with multiple checks on demographics of applicant pool throughout the applicant period

(II) How it will foster interaction among students of different social, economic, ethnic, and racial backgrounds in classroom activities, extracurricular activities, or other activities in the magnet schools.

Creating Positive Learning Environments

Project STEMInspired is fueled by an urgency to develop inclusive schools in which students feel equally valued and teaching approaches address the needs of all learners. 21st century learning environments and opportunities are essential to prepare all students for work, life and citizenship. Developing global awareness can come from "learning from and working collaboratively with individuals representing diverse cultures, religions and lifestyles in a spirit of mutual respect and open dialogue" ("Global Awareness", n.d.).

Mutual respect in the classroom encompasses more than the interaction between students and the teacher. An atmosphere of mutual respect also means students treat one another kindly and respectfully. The result is classrooms where students feel safe, cared for and motivated. Establishing clear, high expectations and creating norms as a class community allow for discussions on what respect looks like and why it is important. Each of the proposed magnet sites use a *Responsive Classroom* (Charney, 2002) approach to teaching that emphasizes academic, social and emotional growth with the goal of building safe and joyful classrooms. For new STEM learning and leadership development, working with the habits in *Leader in Me* (Covey et al., 2008), where staff nurtures a sense of belonging and emotional safety so all students feel comfortable taking risks and working with a variety of peers will also support the building of a positive community.

Designing Groupwork

Helping staff prepare students for cooperation and designing effective groupwork will be guided by the 'complex instruction principles' of Cohen and Lotan (2014), who have reported that social research has evidence to show that when people work together for group goals, they

are more likely to form friendly ties and to trust one another (p. 18). Burris and Garrity (2008) confirm, "Cooperative learning allows diversity in a classroom to become a great strength" (p. 105). Whether collaborating to design learning summits, tinkering in a makerspace, solving an engineering design problem, or exploring during a STEM field experience, inquiry-based classroom activities and STEM learning opportunities will allow students to have an authentic purpose and reason to work together. They will also be finding their voice and will be eager to make a difference.

To help students share their voices, "researchers point to the importance of accepting, even encouraging, students' classroom use of informal or native language and familiar modes of interaction" (as cited in "A Framework", 2012, p. 285). Focusing on rich language-learning opportunities as well as leveraging personal interests of students will help teachers increase participation and engagement in learning. This is important for the goal of building equitable classrooms and schools because "instruction that builds on prior interest and identity is likely to be as important as instruction that builds on knowledge alone" ("A Framework", p. 287).

Building Heterogeneous Classrooms

Crafting cooperative learning experiences to enhance learning in heterogeneous classrooms will be a focal point to help foster these cooperative interactions among students of different social, economic, ethnic and racial backgrounds in classroom activities. Mixed ability classrooms create rich classroom environments and with positive norms in place, students can feel free to fail and make mistakes. Burris and Garrity (2008) explain, "By altering our methods of instruction in heterogeneous classes, we can accomplish what tracking never could –excellent educational experiences for all students" (p. 100). Inquiry-based learning and differentiated instructional strategies will help teachers adjust teaching to meet the needs of diverse learners.

Implementing Rigorous Instruction

Support to meet the needs of all learners will also be complimented by each school's implementation of a multi-tiered system of supports (MTSS) framework. Project STEMInspired focuses on Tier 1 --building strong core instruction for all students (See Quality of Project Design). In the core, students will have access to integrated units of study which will showcase growth mindset learning. Only by following the above practices can we foster and support rich, positive peer interactions for all students.

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

Equity in STEM is paramount. Project STEMInspired is based on the premise that access to STEM knowledge and skills is a social justice issue and the magnet schools are being designed to ensure that all students will have opportunities to access quality STEM learning. Project STEMInspired means to replace the "differences in achievement" paradigm with that of "differences in opportunities to learn because of inequities across schools, districts, and communities" ("A Framework," 2012, p. 279). The second paradigm recognizes how approaches to instruction need to be and can be made more inclusive and motivating for diverse student populations. Project STEMInspired ensures equal access for underrepresented students by 1) expanding STEM learning opportunities, 2) strengthening teaching skills through professional development and 3) providing essential learning resources.

STEM Learning Opportunities

Recognizing the importance of setting high academic goals for all learners, it is important all students have adequate opportunities to learn, data is effectively used to improve teaching and to identify students who need help and STEM learning is offered to students in ways that engage them and give them voice. The publication, *A Framework for K-12 Science Education:*

Practices, Crosscutting Concepts, and Core Ideas (2012), emphasizes how it is essential that the approaches to instruction be made more inclusive and motivating for diverse student populations. To make instruction more inclusive and accessible, STEM instruction will not be taught only occasionally, but will take a prominent place in the magnet programming for all young learners.

For example, since it is important that all of our students have access to new skillsets like coding and robotics; not just offered to a few students in an afterschool class, coding and robotics will be an essential part of the curriculum. According to the National Center for Women in Information Technology (as cited in Baron, 2015, p. 18), girls and women are seriously underrepresented in computer science and their participation is dwindling. When examining District 196 data for enrollment and participation in robotics teams and advanced computer science coursework, there are large disproportionalities for females and students who grow up in poverty. To accelerate progress in closing both the opportunity and achievement gaps that persist, coding and robotics will be an essential part of the magnet programming and community and business partnership initiatives.

All students can benefit from learning to code because they learn computational thinking. Computational thinking can help students in every area of their lives because it is a problem-solving skill, "a logical thought process, the ability to spot mistakes, and a willingness to solve a problem" (as cited by Werrell, 2014). Makerspaces also provide students with opportunities to create, explore and invent by developing problem-solving and critical thinking skills. The makerspace at each site will offer students a venue for inquiry-based learning where they can experiment with new ideas and use new tools and technologies. Learning in a makerspace is both a personal and a social endeavor where students, rather than teachers, initiate the learning process. Students become self-directed learners and helpful teachers when they define and control their own projects and share the skills they have learned with their peers. The

makerspace environment, designed to cultivate curiosity, encourage playfulness, motivate learning and celebrate innovation, uses very inclusive strategies that build on students' interests and backgrounds.

Project STEMInspired intends to use community resources often and efficiently to tie student learning to the real world. Scientists and engineers, architects and farmers will frequent classes and share their work, ask and answer questions, mentor and show students the myriad opportunities that are available to pursue. They will demonstrate how the skills and knowledge the students are developing are used in adult lives and, as adults they have just as many questions and needs to continue learning as the students. Frequent field studies off-campus will expand and ground student learning in the same ways. Science and engineering learned in this manner will serve as productive entry points for strong academic growth for students from diverse backgrounds.

Project STEMInspired aims to expand before and afterschool programs partnering with Community Education to better serve all students. The programs plan to be offered for three six-week sessions, Monday – Thursday; student bussing will be provided; the classes will not be fee-based; and there will be classes for first through fifth grade students. Many of the classes will be focused on providing engaging, hands-on activities in science, math, engineering, robotics and coding. Partnerships with STEM-rich organizations will also be utilized to support the before and afterschool programs.

Afterschool programs can play an important role in STEM learning, especially when the activities mirror real science and engineering practices and there is time for experimentation and failure, collecting and analyzing data and developing strong relationships with mentors and friends ("Afterschool Alliance", 2014). Another benefit to extended day programming is that it can address inequities in participation in STEM activities by underserved populations of students

because girls attend afterschool programs as much as boys and Hispanic and African-American students are two times more likely to participate in afterschool programs than Caucasian students ("Afterschool Alliance," 2014).

Powerful learning can also take place beyond the traditional school building and hours. The Twin Cities community offers a wealth of Saturday learning opportunities that greatly benefit students, which Project STEMInspired intends to make available. The following programs are examples of offerings that will be pursued and implemented. The University of Minnesota offers the Girls Excel in Math (GEM) Saturday program where fourth and fifth grade girls from schools around the city meet on the college campus to learn math with college professors, inspiring young women teaching assistants and their own classroom teachers who have been given special math training on teaching math from a girl's perspective. SciGirls is a local program that provides training, classroom lessons and the chance to participate in the TV episodes created here in St. Paul. The Science Museum of Minnesota has yearly Saturday events that highlight African-American, Hispanic and Women's contributions to Science and Engineering. In addition, both the Society of Women Engineers (SWE) and Inver Grove Heights Community College each have a day for girls to visit a college campus and experience engineering in action.

Professional Development

The reasons for ongoing inequities in schools need to be acknowledged and addressed through professional development. Teachers need to improve their understanding of how students learn STEM subjects, their use of science inquiry and engineering design and their ability to facilitate student learning of 21st century skills such as innovation and creativity, problem solving and teamwork. Teachers will also have increased support in specific content areas such as science and math. Even the most successful schools, Baron (2015) explains, "often

lack teachers who know how to teach science and mathematics effectively—and who know and love their subject well enough to inspire their students" (p. 6). One opportunity will be all elementary classroom teachers districtwide are able to participate in the Stanford University online course by Jo Boaler, *How to Learn Math: For Teachers and Parents,* which focuses on math education by dispelling the belief that some people just aren't good at math and explains the importance of holding a growth mindset.

Teachers also need essential and intentional professional development to understand racial equity in education. Educators need training to understand and recognize institutional racism, bias, unconscious bias and white privilege and how to respond. The staff needs to study and implement research-based methods for transforming curriculum and aligning instruction to meet best practices in equity and cultural relevance. The National Urban Alliance for Effective Education, Inc. (NUA) will establish a long-term partnership with District 196 to promote educational equity through leadership development, coaches and teacher leaders training (see NUA letter of support).

Along with professional development for teachers, there will also be support for instructional leadership teams and administrators to create systematic change (see Quality of Project Design). The report, *Advancing Equity through More and Better STEM Learning* (Baron, 2015) speaks to the need to fix systems, not students:

> …too many interventions for closing the opportunity gap are based on the backward belief that underrepresented students have a deficit that can be fixed by giving them the right tools and teaching them the right skills to enable them to fit into the system. 'The assumption is there's something wrong with the student. There was never any question raised about maybe there was something wrong with the system,' explained Shirley Malcom of AAAS. 'If you turn that on its head and say instead, 'What would a system look like, what would an institution look like that was more supportive of these students? What would they do differently? What would the program be? What experiences would they provide?' That's really what we're talking about' (Ch. 11, ¶ 12).

Resources

Quality teachers and curriculum, the engagement of parents and community members and providing more time and opportunities for students to learn will help to ensure equal access and treatment of traditionally underrepresented students in STEM. It is also important that schools have equitable resources connected to STEM learning including up-to-date technology, well-equipped labs and outdoor learning spaces and materials for hands-on learning. Both schools will have a unique learning space for STEM and leadership showcases offered in the Innovation Station (EP) and Ology Lab (OR). The resources are important because Hannah (2013) explains:

> If not approached correctly, a classroom can be set up in a way that stifles creativity or does not promote a positive learning environment. There are many things that can affect this environment. There are physical elements such as wall art, arrangement of desks, or resources. Also, there are intangible elements such as the energy of the classroom, the rules, or the sounds within the room. Each of these can impact a student's focus and achievement in the class (p. 1).

Knowing the physical environment in the classroom can have a noticeable impact on student success, Project STEMInspired includes a vision for innovative use of space and flexible furniture for classrooms and STEM resources. Designing the classroom space to meet students' individual needs will impact how they learn and interact. Classrooms will be set up to facilitate engagement, be motivating, recognize the social nature of learning, allow for individualized as well as group work and provide for readily available access to digital and other learning tools. Providing all students a choice in what kind of learning space works best for them will help them work both independently and collaboratively and engage in critical thinking. Providing new resources for collaborative learning spaces will ensure equal access and treatment for all learners, including low income students, English learners, underserved and students with disabilities.

(IV) 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.

Free transportation to make choice accessible and district funds for the construction of more classroom spaces (4) at each school site will allow for targeted marketing and recruiting efforts to attract a racially and socioeconomically diverse student population. In addition, building teacher capacity to develop integrated magnet curriculum and implement new instruction strategies will equalize learning opportunities for all students. Project STEMInspired also has an intentional focus on parent and community engagement as an effective desegregation strategy. District 196 has an established Community Collaboration Council (CCC), consisting of district personnel, parents and community members who identify ways to create opportunities for interracial contact between students. The CCC developed the state approved plan for integration at each school that aligns with the goals and objectives for Project STEMInspired.

As parents and the community become more aware of the benefits of diverse learning environments, research shows they are seeking them out for their children. For example, Stuart Wells, Fox, & Cordova-Cobo (2016), state:

> Researchers have documented that students' exposure to other students who are different from themselves and the novel ideas and challenges that such exposure brings leads to improved cognitive skills, including critical thinking and problem solving. Apart from the cognitive benefits, there are additional reasons increasing numbers of middle-class families now want to send their children to diverse schools. Middle-class and white Millennials realize that their children are growing up in a very different country, demographically, than previous generations. For the first time since the founding of the republic, a majority of public school K–12 pupils in the United States are students of color. Students can learn better how to navigate adulthood in an increasingly diverse society—a skill that employers value—if they attend diverse schools (¶ 8-10).

Project STEMInspired is using the principles of community schools to make a plan for parental and community involvement because mutual understanding and support between school and home are interdependent, not independent, entities. Developing family engagement centers,

hiring community partner liaisons, and creating opportunities for regular external evaluation and examination of the MSAP project outcomes for improved academic achievement and reduction of minority group isolation, will ensure the school and community needs and assets stay at the forefront of the magnet programming implementation (see Quality of Project Design and Quality of Personnel). Project STEMInspired will prioritize inviting parents and community members to be involved in all school affairs and the schools will intentionally seek to highlight parent and community voices. School choice through exemplary magnet programs recognizes the need to provide opportunities for students to attend schools that are racially balanced and to provide parents a choice regarding where their children attend school. All desegregation strategies included in Project STEMInspired, including promoting parent and community engagement, are designed to create diverse learning environments to better prepare students for a global society by reducing racial stereotypes and fostering cross-racial understanding.

Quality of Project Design

(I) 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.

Introduction

The Magnet Schools of America (MSA) organization's mission is, "Providing leadership for high quality innovative instructional programs that promote choice, equity, diversity, and academic excellence for all students" (2013). MSA goes on to provide the pillars of magnet schools including diversity, innovative curriculum and professional development, academic excellence, high quality instructional systems, and family and community partnerships. Membership in MSA has guided the development of magnet and other school choice strategies in District 196. Glacier Hills School of Art and Technology and Cedar Park School of STEM,

launched with the support of the 2006 MSAP award, have been successful in reducing racial isolation at their schools and both schools have been successful in raising student achievement.

Roland Barth (2006) writes, "Probably the most important--and the most difficult—job of the school-based reformer is to change the prevailing culture of a school. The school culture dictates, in no uncertain terms, 'the way we do things around here'" (p. 159). He continues,

> And all school cultures are incredibly resistant to change. This is precisely why school improvement—from within or from without—is usually so futile. Yet unless all teachers and administrators act to change the culture of a school, all "innovations" will have to fit in and around existing elements of the culture. That is, they will be superficial window dressing, incapable of making such a difference. (p.160)

In order for student achievement to improve, gaps to reduce and equity to be achieved, attention must be paid to a balance of technical and adaptive change. To understand the design of Project STEMInspired, baseline data from the report District 196 submits to the Minnesota Department of Education as required for World's Best Workforce legislation must be examined. From there, District 196 aims to move toward the following components of Project STEMInspired design:

1. re-thinking school leadership teams;
2. developing strong Professional Learning Communities (PLCs);
3. fostering trust between and amongst learning teams;
4. implementing a research-based, capacity-building MTSS model;
5. integrating magnet theme across the school day;
6. hiring and training coaches for student-centered coaching; and
7. growing parent and community partnerships with both magnet school communities.

World's Best Workforce

Under Minnesota Statutes, section 120B.11, school districts are required to develop a World's Best Workforce (WBWF) Annual Report and report summary for each school year. The World's Best Workforce bill was passed in 2013 to ensure every school district is making

strides to increase student performance. According to the Minnesota Department of Education (2016), each district plan must address five goals:

1. All students are ready for school;
2. All third graders can read at grade level;
3. All racial and economic achievement gaps between students are closed;
4. All students are ready for career and college; and
5. All students graduate from high school.

Echo Park Elementary School of Leadership, Engineering and Technology's 2015 WBWF results show a steady decline across all subgroups and goals in reading and math with the exception of a slight increase for English Learners (EL) in reading. Table 17 shows data in more detail.

Table 17: WBWF Goals: Echo Park Elementary School of Leadership, Engineering and Technology
EL=English Learners; SpecEd=Special Education; FRP=Free and Reduced Price Meals

Reading	All Students	Students of Color	White	EL	SpecEd	FRP
2015 goal	58.7%	49.1%	72%	22.6%	36.8%	44.4%
2015 actual	51.1%	43.6%	61.4%	23.6%	26.2%	36.1%
2016 goal	55.9%	53%	65.4%	32.8%	39.9%	47.2%
Math	All Students	Students of Color	White	EL	SpecEd	FRP
2015 goal	64.1%	56.7%	74%	29.4%	43.7%	54.4%
2015 actual	57.3%	46.6%	72.6%	27.8%	35.7%	43.3%
2016 goal	61.6%	55.8%	75.4%	38.6%	47.9%	53%

In examining the data from Oak Ridge Elementary School of Leadership, Environmental and Health Sciences, we see glimpses of improvement in reading achievement for all students, students of color and free and reduced priced-meals (FRP) population. There is a need, however, to examine EL and special education further in addition to raising the bar and closing the gap at a

more accelerated rate for all learners. In math across the board, OR saw a decrease in proficiency scores. Table 18 shows the goals and actual data in more detail.

Table 18: WBWF Goals: Oak Ridge Elementary School of Leadership, Environmental and Health Sciences
EL=English Learners; SpecEd=Special Education; FRP=Free and Reduced Price Meals

Reading	All Students	Students of Color	White	EL	SpecEd	FRP
2015 goal	57%	50.2%	64.6%	21.6%	31.41%	47.2%
2015 actual	58.2%	51.9%	65.9%	0.0%	23.8%	51.6%
2016 goal	62.3%	57.4%	69.5%	15.5%	34.6%	56.8%
Math	All Students	Students of Color	White	EL	SpecEd	FRP
2015 goal	68.7%	62.6%	75.5%	40.4%	36.6%	59.6%
2015 actual	65.5%	57.9%	75.0%	20.0%	30.9%	57.8%
2016 goal	69.0%	63.8%	77.6%	33.9%	41.9%	63.1%

The goals and data shared with the public as part of District 196's World's Best Workforce (WBWF) Learning Plan as required by the State of Minnesota and the Department of Education, represents 3rd, 4th, and 5th grade Minnesota Comprehensive Assessment (MCA) data. To inquire more deeply, District 196 uses North Star Educational Tools (NSET), an online Response to Intervention (RtI) tool, to house and utilize literacy data for analysis and continuous improvement planning. According to NSET (2016),

> NSET captures data and generates comprehensive reports that provide a unique at-a-glance view of students' academic performance within the Response to Intervention methodology. The tools provide visual displays of data to enable teachers, administrators, and parents to make real-time strategic decisions for students' optimal learning needs. Used in conjunction with RtI's three-tier intervention methodology, NSET propels data guiding teaching and learning to its potential (¶ 1).

NSET allows district leadership to look globally at students across the district, school leadership to look at student learning across the site, grade level, classroom, intervention group and individual student levels. It also empowers stakeholder teams to examine fine grain data to target instruction based on students' strengths and areas for growth. In examining primary data

for both magnet schools in Project STEMInspired, both strengths and areas for growth can be identified.

One indicator for future success in literacy is student performance on the Concepts About Print (CAP) assessment. These are the "basic understandings of reading" (McKenna & Stahl, 2009). CAP include items such as,

- reading left to right;
- top to bottom;
- the 'return sweep' which is the action a reader takes to move from one line to the next;
- every book has a front, back and an author;
- illustrations correspond with the print;
- print is what we read; and
- letters and words convey a message.

If students can master CAP in or before kindergarten, they are on track to accomplishing reading proficiency by grade 3. Figure 1 shows the 2014-15 results of Echo Park Elementary School of Leadership, Engineering and Technology kindergartners on CAP. Students are unable to achieve an "exceeds expectations" on this assessment as there is a ceiling, an end point to the continuum.

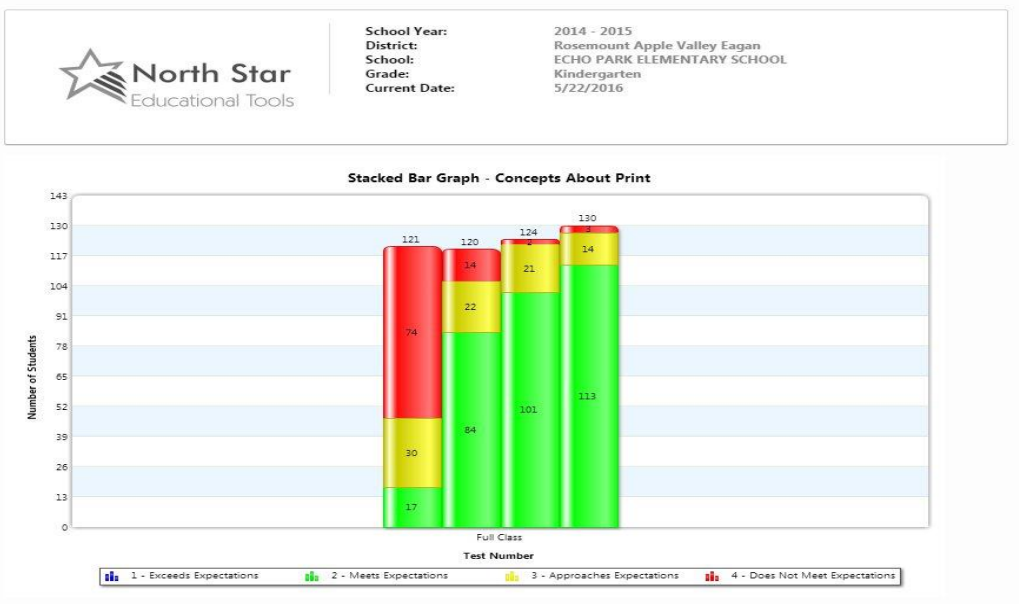

Figure 1. 2014-15 CAP Results for Echo Park Kindergarten Students

Of the 130 kindergarteners at the end of 2015 (the far right bar graph in figure 1), 17 students need additional instruction to fully understand CAP and have the foundation necessary for moving into first grade literacy. The stacked bar graph shows the change across quarterly assessment periods. The first bar graph shows how students are starting kindergarten with an August baseline assessment. The second bar graph shows where students are after one quarter of instruction in November, the third in March, and the final in May.

Oak Ridge Elementary School of Leadership, Environmental and Health Sciences shows similar results on CAP. Figure 2 shows that of 91 students, just nine students remain in the Spring who need additional instruction to fully master CAP and have the necessary foundation for first grade.

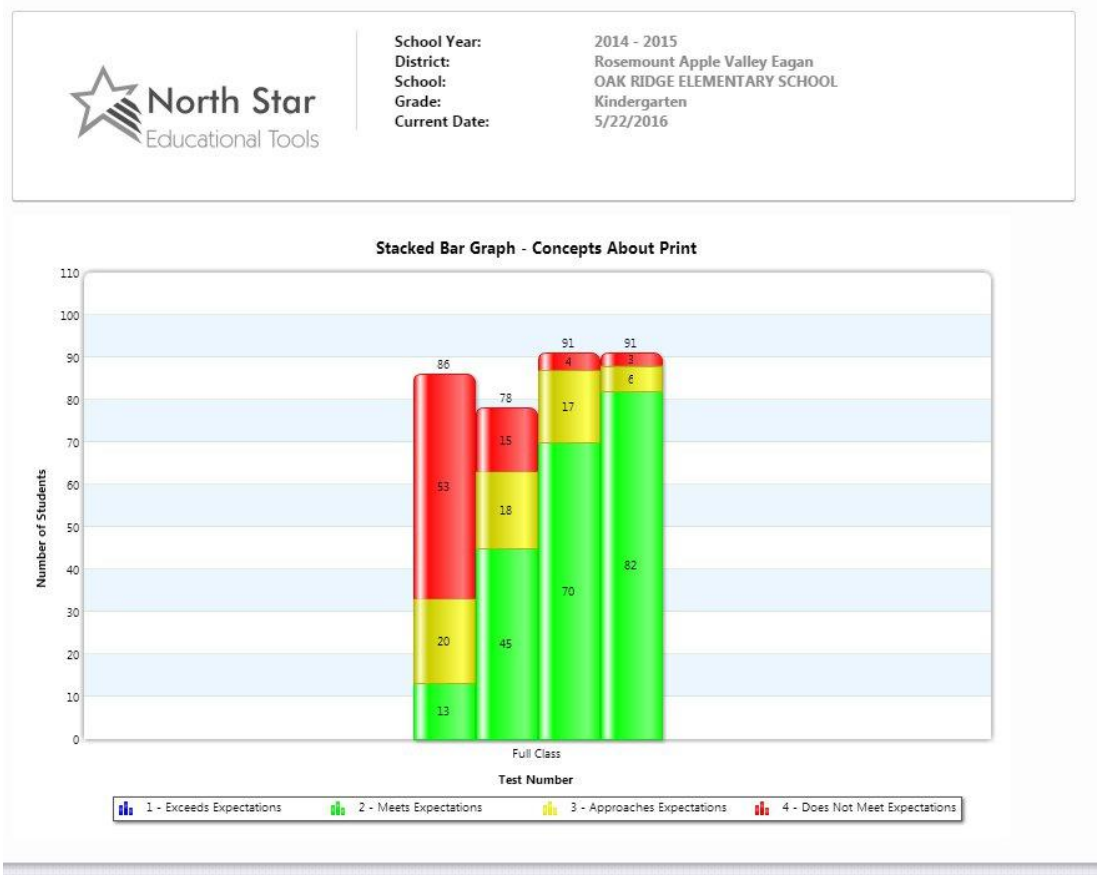

Figure 2. 2014-15 CAP Results for Oak Ridge Kindergarten Students

One of the main assessments District 196 uses to predict achievement on the MCAs is a one-on-one reading inventory called the Benchmark Assessment System (BAS) from Fountas and Pinnell (2011). The comprehensive system reliably and systematically assesses students' instructional and independent reading abilities. Figure 3 shows the BAS levels for Echo Park Elementary School of Leadership, Engineering and Technology first grade in 2014-15. At the end of the year, of 103 first graders, 17 were not yet reading at grade level. The 84% proficiency is a vast improvement from the start of the year when just 58% of students were at proficiency. Eight of the students are receiving additional services in EL and five in special education. One important consideration is that the benchmark for grade level proficiency at the end of first grade (level I) is several text levels higher than the start of first grade (level C).

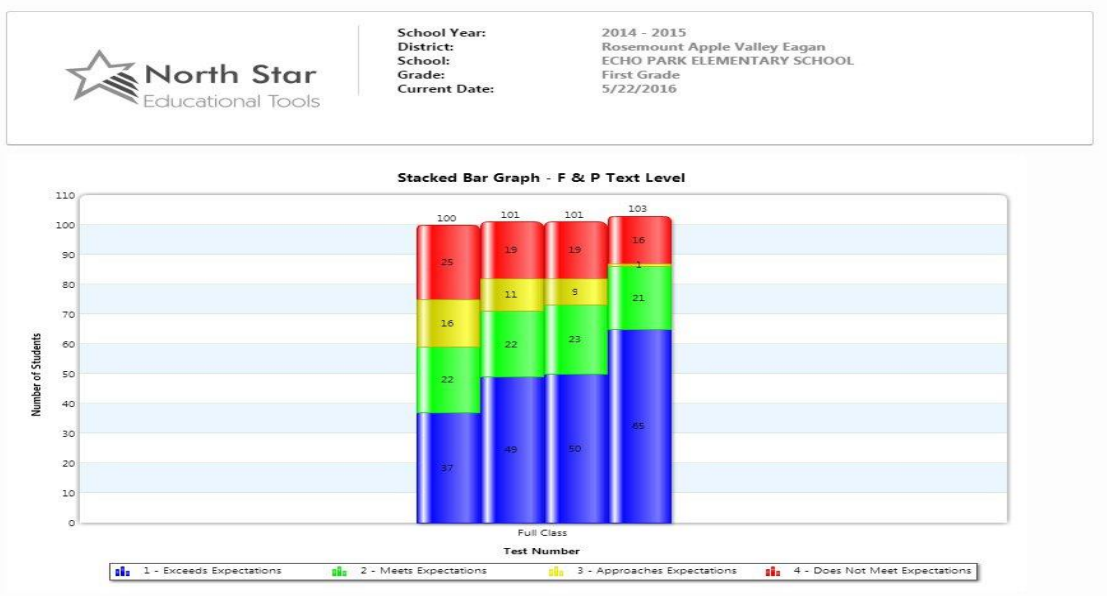

Figure 3. 2014-15 BAS Text Level Proficiency for Echo Park First Grade Students

Second graders at Echo Park Elementary School of Leadership, Engineering and Technology show in figure 4 that of 110 students, 25 (23%) are not yet at grade level proficiency in May. Of the 25 students, 12 are in EL and six receive special education services.

Figure 4. 2014-15 BAS Text Level Proficiency for Echo Park Second Grade Students

Oak Ridge Elementary School of Leadership, Environmental and Health Sciences first graders, as show in figure 5, show 21 of 90 students (23%) not yet reading at grade level. Twelve of these students receive special education services, and seven receive EL service.

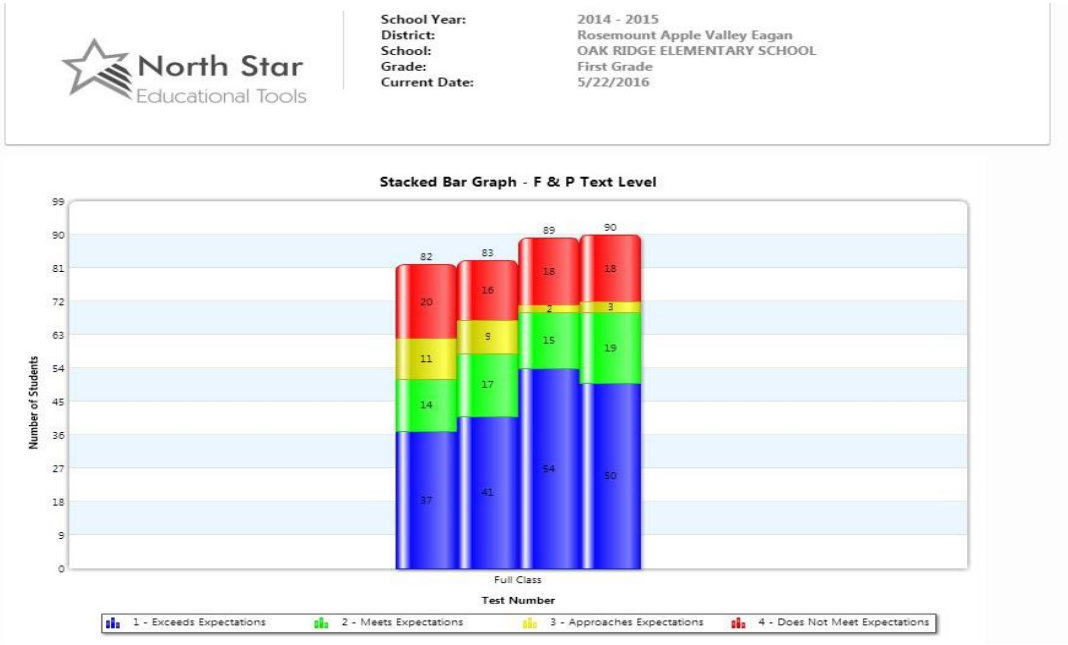

Figure 5. 2014-15 BAS Text Level Proficiency for Oak Ridge First Grade Students

Second grade BAS results for Oak Ridge are similar. Figure 6 shows of 92 second graders, 26 students were not yet at grade level. A finer grain analysis shows that of the 26 students, six receive EL services and 12 receive special education services. NSET does not break down the data into demographics including race or socio-economic status.

Figure 6. 2014-15 BAS Text Level Proficiency for Oak Ridge Second Grade Students

In examining the BAS data for grades three, four, and five, one can see the correlation with the MCA results. One purpose of the BAS is to serve as a progress monitoring tool and should serve as a predictor of student performance on the state accountability (MCA) reading test. Table 19 shows the correlation of results in 2014-15 for Echo Park Elementary School of Leadership, Engineering and Technology. There seems to be a false positive for many students and the reliability of the BAS could be examined to determine why there seems to be an inflation in BAS scores thus not accurately predicting performance on the MCA reading exam.

Table 19: Echo Park MCA and BAS Correlation for 2014-15

Grade Level	MCA reading proficiency (all subgroups	BAS proficiency (all subgroups)
3rd Grade	52%	75.8%
4th Grade	49%	62.8 %
5th Grade	51%	71.5 %

District 196 provides on-going professional learning in the administration and interpretation of the BAS. An outside study of District 196 data (Appendix I) showed a high correlation between the two assessments so variation can be attributed to false positives or false negatives. Table 20

shows the correlation for OR. It appears that fifth grade teachers were able to accurately assess students to match their performance on the MCAs. Third grade has a large discrepancy.

Table 20: Oak Ridge MCA and BAS Correlation for 2014-15

Grade Level	MCA reading proficiency (all subgroups	BAS proficiency (all subgroups)
3rd Grade	58%	88%
4th Grade	50%	63%
5th Grade	65%	65 %

The primary grade data tells a promising story for both schools; Table 21 shows a trend of higher performance. Caution should be exercised in drawing conclusions on how these learners will perform on future MCAs as other school data suggests a correlation may not exist.

Table 21: Echo Park and Oak Ridge proficiency rates for primary grades 2014-15

School	Kindergarten CAP proficiency	1st grade BAS proficiency	2nd grade BAS proficiency
Echo Park	87%	83%	77%
Oak Ridge	90%	76%	72%

Instead, educators and leaders should focus on second-order or adaptive change to ensure the bar is raised and the gaps are closed. District 196 conducts similar assessments and progress monitoring in mathematics but NSET is still in the process of developing the capacity for the same kind of data analysis.

Develop Capacity for Teachers to Increase Student Achievement (Logic Model Outcome)

In the research around adaptive and second order change, an emphasis is placed on developing the capacity for the work to be an inside job. When stakeholders are actively engaged in the transformative change, the results are attained and sustained.

Instructional Leadership Teams (Logic Model Activity)

The Instructional Leadership Team is responsible for guiding the implementation of the Literacy Collaborative and integration of the magnet theme across the school. Each member of the Instructional Leadership Team will go through an application and interview process to ensure

engagement in the shared leadership (See job description in Resumes of Key Personnel and Job Descriptions). These responsibilities include: communicating the goals and outcomes of Literacy Collaborative with the home and school community; engaging the school community in discussion about literacy teaching and learning; developing a communication and evaluation plan for measuring student progress; and monitoring program effectiveness through data collection and analysis. The Instructional Leadership Team meets in the summer prior to project year one to revisit how to write S.M.A.R.T. (Specific, Measurable, Attainable, Realistic, Time Bound) goals for the building, grade level and individual classrooms or intervention areas. These goals are monitored throughout the year and the data is used at the end of the year to write a year-end report reflecting on implementation and progress. Longevity data is studied, and trend lines are established to track progress in closing achievement gaps for all children. Goals are set for the following year based on the data. Instructional Leadership Teams aspire to integrate the magnet theme across the school day through decisions related to unique grade-level experiences related to both core curriculum and integrating theme, inquiry, and STEM habits of mind into current units of study, fostering community partnerships for authentic learning, planning schoolwide magnet events, utilizing flexible and innovative learning spaces and "screaming the theme."

Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences have been engaged in additional leadership training during the 2015-16 school year. This development will continue into the project years. Tables 22 and 23 describes the leadership team development and ongoing continuous learning and improvement.

Table 22: Previous Leadership Team Development (Logic Model Activity)

Timeline	Activity and Participants	Outcomes (Past and Potential)
2015-16 school year 6 full days	Core Leadership Training (Principal, MTSS Coach, Tier 3 Lead)	
Spring 2016 one half day	Magnet Leadership Meeting: Second-Order Change and Professional Development Planning Core Leadership Ream, Teaching and Learning district staff, and Magnet Coordinator	Desire to move away from a "divide and conquer" approach of leadership to an accordion approach where one Instructional leadership team with members representing all stakeholders are engaged in setting the vision for the organization. Short term work groups which sunset will allow for distributive and strengths-based leadership from members of staff, student body, parents, and community.
May 2016 one half day	School Support Continuous Improvement meeting; principal, assistant administrator, cabinet and Teaching and Learning staff	

Table 23: Upcoming Leadership Team Development (Logic Model Activity)

Timeline	Activity and Participants	Outcomes (Past and Potential)
June 2016 2 full days	Building a continuous improvement site plan and learn MN MTSS Reading Tiered Fidelity Inventory Tool (Appendix J) Instructional Leadership Team	Instructional Leadership Team analyzes and reflects upon 2015-16 goals and data to develop the 2016-17 continuous improvement site plan. The plan serves as a dynamic living document that is revisited several times throughout the school year. The plan also satisfies compliance requirements for the State of MN, the district, and the teachers' union.
Summer 2016 1 full day	Instructional Leadership Team: literacy training and leadership capacity building	Members of school leadership teams will engage in a one-day session, focused on a deep, reflective understanding of Readers' Workshop and Writers' Workshop (a half-day focus on each topic).
2016-17 school year 6 full days of leadership team training	Further development of foundational knowledge of MTSS model, breaking down silos and building teams around learners and learning in an accordion approach	Highly functioning teams who trust one another and can build the capacity for transformative Professional Learning Communities (PLCs) within their buildings.

PLC (Logic Model Short-Term Outcome)

A focus for all elementary schools beginning in 2016 is rebooting and transforming Professional Learning Communities (PLC) within each site. District 196 has long been a proponent of PLCs, referred to as Learning Teams for many years, sending administrators and leadership teams to conferences presented by the DuFours (Dufour, DuFour, Eaker, & Many, 2006), bringing in consultants from Solution Tree and participating in various book studies. Through data analysis over the past few years, the district leadership, including elementary principals, surfaced the need to revisit PLCs and refocus the work around transformative collaboration. The study in second-order change has also served to focus the goals for 2016-17 around building the capacity for principals and leadership teams to lead and grow the collaborative teamwork in the buildings.

Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences will undergo a refresh and reboot of their Instructional Leadership Teams. Each team will consist of one classroom teacher from each grade level, the MTSS coaches, the STEM coach, the Tier 3 Lead, a Tier 2 (Leveled Literacy Intervention or Reading Recovery) teacher, an EL teacher, a special education teacher, the magnet TOSA, media specialist, principal and assistant administrator. Each of these individuals represent a stakeholder group and serve as the communication hub for the work of the organization. In *Collaborative Teams that Transform Schools*, Marzano, Heflebower, Hoegh, Warrick, and Grift (2016) share an example of this type of team.

> As a way to flatten its leadership structure, Catamount High School established the Learning Leadership Team (LTT), a concept articulated by Michael Fullan (2008). The LLT serves as a campus-based "think tank" to underscore the idea that learning is the work of the school. Faculty, staff, and school leaders, as well as students, engage in this work. The structure of the team was purposely developed to serve as a formal venue for staff input and to provide transparency in decision making for the entire faculty (p.108).

Instructional leadership teams can use the guidance offered by Marzano et al. (2016) to build the capacity of learning teams. Figure 7 provides a checklist teams can use in establishing and fostering teamwork throughout the year.

Preliminary Processes

- ☐ Establish and train a leadership team that includes key teacher leaders and is responsible for the school's overall vision.
- ☐ Identify specific collaborative team structures the school will use.
- ☐ Establish the frequency with which different teams will meet.
- ☐ Adjust the schedule to provide collaborative time.
- ☐ Develop internal (for staff) and external (for students and parents) communication regarding the collaborative team process.
- ☐ As a leadership team, model the collaborative process expected from teams schoolwide.
- ☐ Survey staff beliefs, understandings, and experiences regarding collaboration.

Beginning Schoolwide Collaboration

- ☐ Communicate clear expectations for the work in which collaborative teams will engage, such as creating proficiency scales or developing teacher abilities.
- ☐ Facilitate the creation of group norms by distributing samples, collecting copies of each team's norms, and providing feedback to teams regarding those norms.
- ☐ Identify and collect specific artifacts or products from collaborative teams to monitor their initial work and provide feedback.
- ☐ Develop a sit-in schedule to observe the collaborative process of each team.
- ☐ Highlight best practices and celebrate the work of collaborative teams that are functioning well.
- ☐ Periodically ask collaborative teams to engage in self-evaluation regarding adherence to team norms.
- ☐ Meet with the leadership team to reflect on initial progress and plan support needed for continued progress.

Continuing Schoolwide Collaboration

- ☐ Continue to collect artifacts of practice to monitor the work of all teams.
- ☐ During staff meetings, have various collaborative teams present products of their work.
- ☐ Identify and assist teams that are struggling with the collaborative process.
- ☐ Intervene and take necessary action for teams that are dysfunctional or not engaging in the collaborative process.
- ☐ Focus sit-in observations on teams needing the most assistance and provide more autonomy to teams functioning well.
- ☐ Meet with the leadership team to reflect on the schoolwide collaborative team processes and plan for adjustments if necessary.

Figure 7. Checklist for Establishing and Maintaining Collaborative Teams Schoolwide. From Marzano, Heflebower, Hoegh, Wamick, & Grift (2016).

Foster Trust (Logic Model Activity)

Educational leaders who enact a balance of technical and adaptive leadership can affect student achievement (Waters, Marzano, & McNulty, 2003). Empirical evidence also emphasizes that trust is strongly connected to student outcomes (Daly & Chrispeels, 2008). A study of 292 site and district administrators and teachers in four school districts in California on the topic of predictive conditions for this balance of leadership shows specific aspects of trust, such as

respect, risk and competence are significant predictors of the change necessary to raise the bar and close the gaps in education (Daly & Chrispeels, 2008).

Covey (2008) illustrates, "trust is one of the most powerful forms of motivation and inspiration. People want to be trusted. They thrive on trust (p. 29)." Within Project STEMInspired, District 196 is committed to supporting the leaders at Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences in becoming highly functioning teams by constructing that foundation of trust. Developing trust overnight is impossible. However, through shared experiences across time; an in-depth, strengths-based mindset toward every leader on the team; the combination of character and competence; and a stance of vulnerability and risk taking; high levels of trust can be achieved (Covey, 2006; Lencioni, 2002). Sinek (2014) resurfaces the principles of a service oriented leadership as his anecdotal evidence supports the notion that leaders who are willing to "eat last" are rewarded with colleagues who are loyal, devoted, and relentlessly committed to the organization's vision. Project STEMInspired aims to achieve the level of trust needed for transformative change.

Multi-Tiered System of Support (MTSS) Model

Tier 1 (Core)

District 196 has affiliated with Lesley University and Ohio State University in the Literacy Collaborative continuous improvement, capacity building MTSS Model. This constructivist approach to learning is designed to develop PreK-5 learners as thinkers, problem solvers and researchers working together in a global society, through integrated units of study experienced during a two and a half hour literacy block.

Tier 1: Integrate Magnet Theme and Increasing 21st Century Skills and STEM Habits of Mind (Logic Model Outcomes)

Aligned with the theory of second-order change and in an effort to not saturate teachers with professional development, Project STEMInspired is committed to thoughtful and strategic professional development planning. Spring 2016, site magnet leadership came together to consider adaptive and transformational change around the professional development plan for each magnet site. Figure 8: Project STEMInspired--Echo Park and Oak Ridge Professional Development Strategic Plan outlines the plan for the learning and how it will be introduced, layered and integrated throughout the Project STEMInspired years. Professional learning activities are described in detail in part (3) of this section of Quality of Project Design. Developing 21st century skills and STEM habits of mind is described fully in the Competitive Preference Priority 4: Promoting Science, Technology, Engineering and Mathematics (STEM) Education.

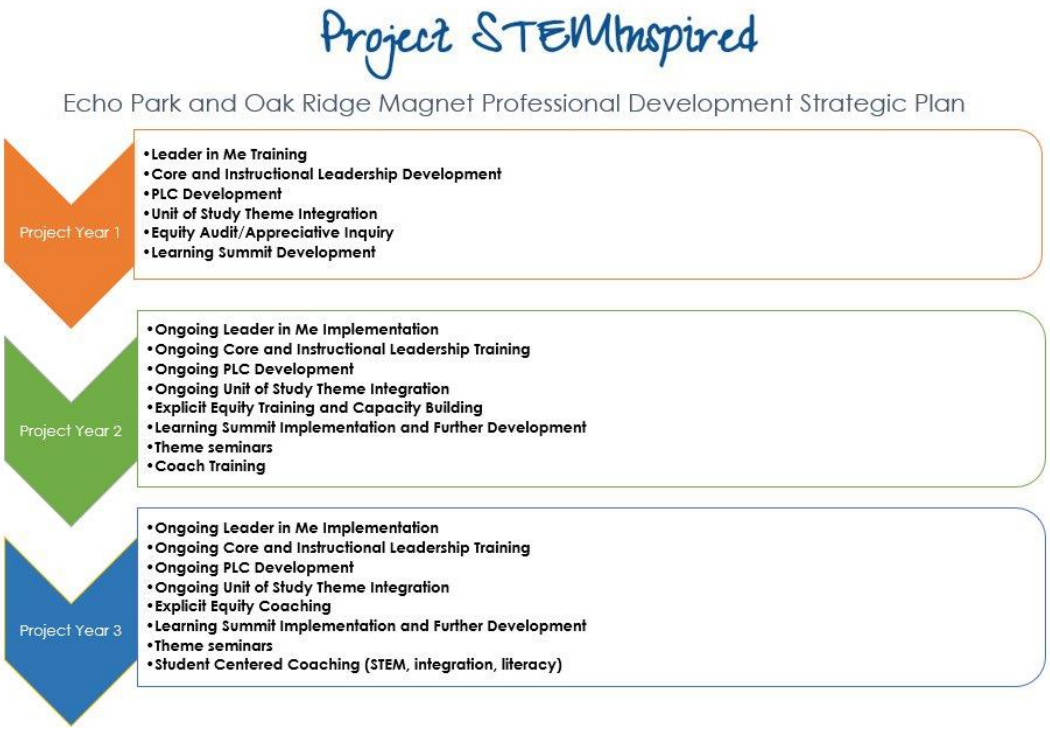

Figure 8. Project STEMInspired--Echo Park and Oak Ridge Professional Development Strategic Plan

Tier 1: Equity and Inclusive Education for ALL Learners (Logic Model Outcome)

"Student ethnicity and social class are not barriers to learning; rather, schools that do not properly respond to the needs of these students are the barriers. Schools must adopt a new, more comprehensive approach to ensure learning for all students, especially underserved minority students and those from poor communities" (Muhammad & Hollie, 2012, p.2). The Literacy Collaborative (LC) MTSS model is founded upon making data-informed instructional decisions to capitalize on the strengths and meet the individual needs of all learners. This requires adults to do important reflective work to examine their own biases, as well as reaching out to get to know the gifts and talents each child brings to the learning culture. For example, a kindergarten student may be having difficulty with letter formation. An implicit bias could bring about an assumption that the child has difficulty learning. Through further examination, it is discovered that this child is simultaneously learning to write Arabic at Duksi on Saturdays. She is confusing the formation of her English alphabet with the formation of her Arabic alphabet. Through healthy PLCs and student-centered coaching, as well as a concerted effort to get to know the whole child, this asset and a sign of her capability to learn is surfaced. It also changes the course of intervention, helping her to understand the "why" behind her current difficulty. Arabic is written right to left, where English is written left to right.

Tier 1 instruction aims to catapult the strengths of all for a rich, diverse, heterogeneous learning community where teachers are co-learners, co-teachers and co-facilitators in a constructivist inquiry learning environment. District 196 has been committed to growing the capacity of all leaders and teachers to cultivate the potential of all learners to meet high standards. Previously, District 196 has invested in principals attending the Institute for Courageous Principal Leadership through Minnesota State at Mankato, Beyond Diversity, and

through leadership training with Dr. Sharokky Hollie. Teams from District 196's other magnet schools have been a part of the Science Museum's Nexus training and part of the Page cohort. The Science Museum of Minnesota is committed to Professional Development that addresses access and beliefs, pedagogy and curriculum, the nature and culture of STEM, the role of student, teacher and community identity, and systems-change. This foundation of learning will guide next steps for Project STEMInspired and teams will use data to inform the next layer of learning needed. One next step for Project STEMInspired is to partner with the National Urban Alliance and the work of Dr. Yvette Jackson. District 196 is currently negotiating a long term partnership.

Tier 2

In the Literacy Collaborative Model, Tier 2 is layered within core instruction. Tier 2 interventions happen during managed independent learning time which is part of the two and a half hour literacy block. Tier 2 interventions align with the theory, structure and language of Tier 1 and include *Reading Recovery®, Literacy Lessons, and Leveled Literacy Intervention (LLI).* Tier 2 students also receive small group guided reading instruction from the classroom teacher. The classroom teacher teaches in response to the Tier 2 intervention with a focus on comprehension and fluency that builds upon Tier 1 instruction.

Reading Recovery® has one clear goal: to significantly reduce the number of children who are having difficulty learning to read and write. During first grade, *Reading Recovery®* students meet individually with a specially trained teacher for 30 minutes a day for a period of 12 to 20 weeks. During this time, these children make faster than average progress so they can catch up with their peers and continue to work on their own within an average group setting in core instruction.

Literacy Lessons is the same one-on-one instruction as *Reading Recovery®* but happens with special education and EL students from any grade level who show a need for the individually designed instruction, tailored to ensure more than a grade level's worth of growth in 12-20 weeks.

Leveled Literacy Intervention (LLI) is a small group, supplementary intervention designed for students who find reading and writing difficult. The goal of LLI is to bring students to grade level achievement in reading. By actively participating in intensive lessons on each level, readers have the opportunity to expand their reading and writing abilities.

Math Recovery® is an internationally recognized highly successful program of intervention in early number learning. The overarching objective for *Math Recovery®* is to provide a robust intervention framework for teachers working with elementary students to help in the construction of numeracy skills through data informed individualized instruction. *Math Recovery®* is a one-on-one daily 30 minute intervention for 12-15 weeks delivered by a highly trained *Math Recovery®* teacher.

Tier 3

This targeted intervention is a short burst (5-7 minutes) of instruction that happens in the core classroom. The goal of tier 3 intervention is to close specific behavioral, language and academic gaps at an authentic point in the child's day. Tier 3 interventions can be delivered by a variety of adults (once trained) including, but not limited to, classroom teachers, specialists, interventionists, administration, parents, community members and paraprofessionals.

STEMInspired Curriculum

As explained in Priority 4: Promoting STEM Education, District 196's K-5 Units of Study (Appendix D), aligned to state standards and designed using the Backwards by Design framework, will allow for an interdisciplinary approach to STEM learning through inquiry, in a workshop instructional framework, where students are immersed in study, researching, clarifying misconceptions, synthesizing new learning and publishing out contributions to the field of study. Each unit of study, allows for the development of unique magnet theme integration as well as inclusion of technology tools for learning aligned with the District 196 Learning and Technology Framework (Appendix E).

Units of study are integrated across the school year horizontally within the grade level and also vertically across the school providing opportunities for within and cross grade collaboration. For example, all grade levels begin the year with the unit titled, "Establishing a learning community. Exploring our similarities and the things that make us unique (diversity)." Within each unit of study, learners work to master MN social studies and English/language arts standards within their self-contained, heterogeneous classroom for a literacy block (two and half hours) and a math block (90 minutes). Integration occurs across specialist times of art, music, library, and physical education as well. When the entire school community is immersed in a similar unit of study to launch the year, connections are made in and across grade levels and amongst specialists, administrators and staff.

Project STEMInspired emphasizes engineering in the elementary curriculum. The schools use the engineering design process (an example can be found in Appendix F) to explore all complex problem solving—whether it is during the literacy block and units of study, in math, at recess, in phy. ed., etc. An extra emphasis on coding and robotics will empower students to apply science and math content and link them to technology, problem solving and design.

A critical component of Project STEMInspired is the integration of skills, frameworks and theories into one cohesive and aligned model. The Literacy Collaborative MTSS model affords a unique opportunity to thread the four c's: collaboration, communication, critical thinking, creativity along with STEM habits of mind, the engineering process, equity and theme. For example, each school will adopt the *Leader In Me* (Covey, Covey, Summers & Hatch, 2008) principles based on the content from *The 7 Habits of Highly Effective People*. The *Leader in Me* paradigm, by FranklinCovey, sees every child as capable and every child as a leader. The LC model also operates under the same philosophy. Teaching 21st century leadership and life skills to students will create school cultures of student empowerment. The use of the common language across all theories will impact everything – instructional strategies, curriculum, culture and community partnerships.

Literacy Collaborative core instruction is a data-driven individualized instruction model that integrates the Common Core Standards to ensure students are college and career ready by the end of their educational career. The workshop model vertically aligns data and instruction through inquiry units of study PreK-8. See Table 24: Workshop Model Integrating Common Core for an outline of the instructional framework. All Tier 2 and Tier 3 interventionists push in and interventions are imbedded into the workshop.

Table 24: Workshop Model Integrating Common Core

Block	Genre-Led		Standards
Language & Thinking Workshop	Interactive Read Aloud	Whole Group	Literature and Informational(content) Standards Speaking and Listening Standards

Readers' Workshop	Mini Lesson Guided Practice Share	Whole Group Small Group/1-1 Whole Group	Literature/Language/Informational (Content) Literature/Language/Informational (Content) Speaking and Listening
Writers' Workshop	Mini Lesson Guided Practice Share	Whole Group Small Group/1-1 Whole Group	Writing/Foundational/Language Writing/Foundational/Language Speaking and Listening

Project STEMInspired aims to expand before and afterschool programs partnering with Community Education to better serve all students. See Priority 4: Promoting STEM and Desegregation for more details around extended day programming. When designing the integrated STEMInspired curriculum and extended day learning opportunities, Project STEMInspired utilizes community assets.

Environment for Learning

The student's classroom is where children will learn the skills deemed necessary to achieve success in the global society. The classroom is where they will gain an understanding of their place in the world and the gifts that they have to offer. Project STEMInspired aims to transform the environment for children in order to provide one where students thrive. Classrooms can be arranged in a way that stifles creativity or promotes it. Arranged for compliance or for collaboration. Considering the furniture within the classroom is an important

part of the project, but redefining ‘classroom’ is also an important component. Project STEMInspired proposes flexible learning spaces, spaces for play and exploration, as well as innovative opportunities for classroom extensions through field studies and extended learning opportunities.

District 196 developed a furniture task force to take a look at the current classroom environment for students in advance of a three year multi-million dollar bond. The current priority for use of these funds are to begin with the district’s four comprehensive and one theme high schools. Following, the implementation will move to middle schools. It would not be until Year 3 of the project where Project STEMInspired sites could see some funding for redesigned learning environments. There is not a plan currently to outfit all classrooms across the district, however. See Appendix K for an example set of minutes from one of the furniture task force meetings. The task force determined,

> ISD 196 Dynamic Learning spaces will be student centered, flexible and adaptable, transforming the classroom arrangements for optimal learning. Ergonomic furnishings will be durable, technology-friendly and moveable, encouraging student choice, critical thinking, reflection and collaboration. Learning spaces will support differentiated instruction and multiple learning modes, creating community centered environments that promote continuous improvement (Appendix K).

Architect Trung Le who has worked with The Third Teacher (“Inc. OWP/P Cannon Design”, 2010), speaks to the importance of creating an ecosystem of learning. It is unnatural for humans to be expected to sit still in rows in chairs not necessarily designed for the size of the child. Instead the environment must allow for agility and flexibility where students can learn at their own pace following their own rhythm. Project STEMInspired sees the need to ensure all students have a 21st century ecosystem of learning in the near future.

District 196 has partnered with Wold Architects and Engineers to create dynamic ecosystems of learning. This partnership goes beyond the purchasing of furniture and into the

mission, beliefs, and goals of 21st century STEM education with the child in mind. As stated in Priority 4: Promoting STEM Education and illustrated in Table 4. Magnet Theme Spaces on page 17. Project STEMInspired is committed to cultivating student leadership while considering the critical role the environment plays in fostering a constructivist learning environment.

Increase Parent and Community Partnerships (Logic Model Outcome)

A key principle of successful magnet programming is the partnerships fostered and maintained with parents, communities, businesses and universities. District 196 has a strong history of partnerships with local businesses. In fact, the partnerships with companies like Thomson Reuters, Dakota Electric, Delta Air Lines, Lockheed Martin, Stream Global and Uponor, aided in District 196 receiving the Department of Labor's $2.99 million Youth CareerConnect grant in 2014 to turn Apple Valley High into a school with a dedicated STEM focus. So far, the following organizations are committed to supporting Project STEMInspired with more to come:

- Dakota Electric
- Dakota Scott Workforce Investment Board
- FranklinCovey
- Lockheed Martin
- University of St. Thomas, Center for Engineering Education
- The Works Museum
- Twin Cities PBS
- Uponor

Past successful partnerships with the Science Museum of Minnesota, the Minnesota Zoo, Ag in the Classroom, Dakota County Parks, Valley Natural Foods and local universities such as Dakota

County Technical College and Normandale provide the Project STEMInspired team confidence that community partnerships will continue to grow. One unintended consequence of having so many partners is not having the systems or structures to utilize the contributions they want to provide, be it monetary, human resource or other. Therefore Project STEMInspired will hire a Community Partner Liaison to lead the efforts to recruit, utilize and retain the partnerships that will enhance, align and integrate with current district curriculum. The Community Schools framework will provide helpful components for Project STEMInspired as each magnet school works to capitalize on the neighborhood and community in which the school resides. Frankl (2016) lists several essential strategies for community schools that help to inform Project STEMInspired (figure 9).

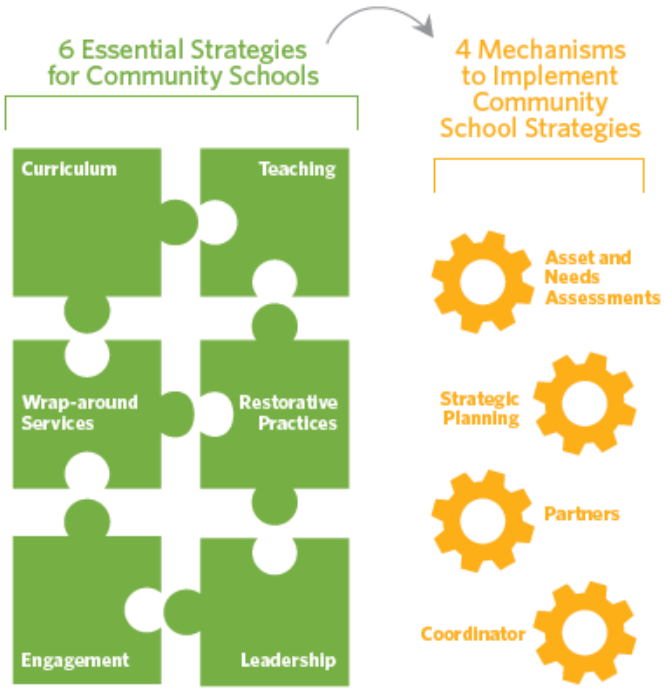

Figure 9. Community School Infographic from southerneducation.org

As discussed previously, curriculum, teaching, and leadership are woven into all aspects of Project STEMInspired. Wrap around services are support services provided to and within the school. For example, the School Support Team as represented in the Project STEMInspired

organizational chart (Appendix L), consists of the superintendent, directors of elementary education, special education, and teaching and learning, and coordinators of teaching and learning and special education, who meet quarterly to "wrap around the site" and provide guidance to the school leadership team on goal setting and progress monitoring. One area Project STEMInspired plans to begin and grow is with family engagement. Students with engaged families attend school more regularly, see better results in math and reading, are more likely to enroll in advanced-level programming in upper grades and see higher graduation rates. Further, teachers are more likely to remain in the school when families are involved and trusting relationships are built (Henderson & Mapp, 2002). By opening a family engagement center within the school site, District 196 aims to bring families into the school to receive access to technology and resources to support their lives at home.

(II) 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; the demonstrated commitment of any partners; evidence of abroad support from stakeholders (e.g. State educational agencies, teachers' unions) critical to the project's long-term success; or more than one of these types of evidence.

History provides the evidence to support District 196's commitment to magnet school programming as the strategy best suited to reduce minority isolation, promote integration, and raise student achievement. Eight years ago, Diamond Path Elementary school of International Studies (DP) was chosen to assist in drawing students from two other schools, Cedar Park STEM School (CP) and Glacier Hills Elementary School of Arts & Sciences (GH), which were identified as racially isolated from the State of Minnesota. All three transitioned to magnet schools with the help of the 2007 MSAP award. As a result, DP moved from 11% students of color in 2008 to 32% today which mirrors the district average. The school population increased from 532 students to 814. DP continues to draw students from all across District 196 as well as neighboring districts. All three schools DP, CP, and GH are nationally recognized Magnet

Schools of Excellence by Magnet Schools of America, and both CP and GH have been recognized by the Minnesota Department of Education for racial achievement gap reduction and both CP and GH no longer hold the racially isolated designation from the Minnesota Department of Education. District 196 continued its commitment to magnet programming by completing the STEM pathway with Valley Middle School of STEM, a magnet school with transportation provided, and Apple Valley High School. Both secondary schools have state of the art Fabrication Labs and integrated STEM programming.

Due to the long waiting lists at District 196's current elementary magnet schools, the community supported a bond referendum to add classrooms not only to the current magnet schools but to the schools in Project STEMInspired in anticipation of their growth.

As with past recipients of the MSAP grant, who utilized the funds to access high quality professional development, purchase much needed equipment and materials, and to integrate the theme innovatively into district curriculum, Project STEMInspired plans to do the same. The support of the school board, superintendent, and community as well as evidence from District 196's past and present, prove the school communities of Echo Park Elementary School of Leadership, Environmental, and Health Sciences and Oak Ridge Elementary School of Leadership, Engineering, and Technology will thrive. For a detailed examination of financial operating plan, please see Appendix M.

(III) 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.

Introduction

Project STEMinspired professional development plan will follow the characteristics of second-order change (Walters, Marzano, & McNulty, 2003) including the idea that this will be a break with the past, outside existing paradigms, challenging prevailing values, emergent,

unbounded, complex, non-linear, requiring new knowledge and skills, and most importantly implemented by stakeholders (versus first-order change which suggests bringing in outside experts). While the plan may appear linear in graphic form in figure 10 and 11, Project STEMinspired aims to layer learning, use data gathered from stakeholders to adjust the professional learning plan, all while empowering the experts within the system to support implementation through side by side collective inquiry. Appendix N shows in more detail each component of the professional learning plan.

Figure 10. Project STEMInspired Echo Park and Oak Ridge Professional Development Strategic Plan

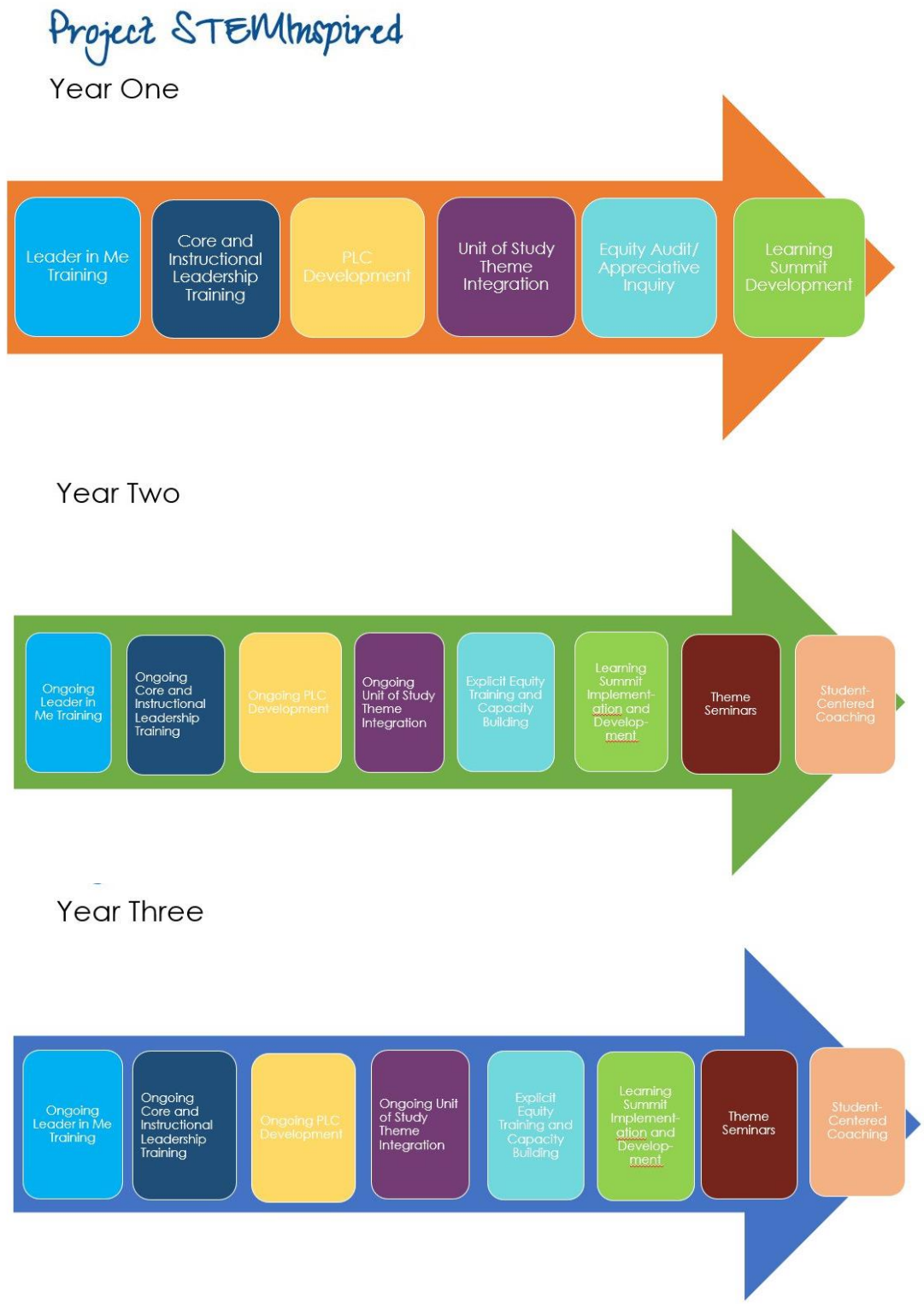

Figure 11. Illustration of Project STEMInspired Three Year Professional Learning Plan.

Data-informed Professional Learning for all Staff

Highly trained MTSS and STEM coaches in partnership with district leadership and school instructional leadership teams use coaching and reflection data to determine their staff development. Professional development is differentiated depending on the needs of the children and staff in each individual school. Classroom implementation begins during the second year when MTSS coaches begin providing 40+ hours of job-embedded professional development for classroom teachers in the school. Through regular meetings and assignments, teachers learn about the literacy processing theory (Clay, 1979, 1991, 2012), the rationales and theory behind it and how to implement and refine their practices. They also begin to monitor student progress through individual student assessments, data collection and analysis. The coaches provide individual coaching for participating classroom teachers as they learn to implement the framework across the training year.

Over the next several years, teachers become more consciously competent and continue to deepen their understanding of data-informed instruction. During professional development teachers learn how to use the continuum of the Common Core Standards, the literacy benchmark continuums, STEM habits of mind, continuum of content standards and common formative assessment data to design action plans to shift learners. Classroom teachers have case study students, videos of the teaching and artifacts from instruction that highlight the shifts in student achievement based on data-informed teaching. Teachers bring this data to all professional development sessions. Work continues with the instructional leadership team, district personnel and parents to support increased learning and to build a vibrant community of enthusiastic critical thinkers. At the end of five years, there is a strong sense of professional teamwork that has been created and enhanced in communication amongst all colleagues.

Leader in Me Training

Both Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences received a grant from Panda Express to cover the training costs of Leader in Me. The MSAP award would support the stipends for teachers to attend the training offered during the summer. The *Leader in Me* paradigm, by FranklinCovey, sees every child as capable and every child as a leader. Teaching 21st century leadership and life skills to students will create school cultures of student empowerment. The use of the common language of the habits will impact everything – instruction strategies, curriculum, school culture and extended learning events.

When the grant period ends, the Instructional Leadership Team at each site will continue the focus and implementation of Leader in Me as part of the continuous improvement plan.

Core and Instructional Leadership Team Development

District 196 is fortunate to have a renowned national expert employed and working with the entire system to develop the capacity for highly functioning teams operating under second-order change. District Literacy Collaborative trainer Beth Swenson (see resume for an extensive list of qualifications) will be training the core and instructional leadership teams for Project STEMInspired. As the team members work together to make decisions about how to teach students, they address the following;

- Integrating MTSS with other programs and district curriculum requirements,
- Analyzing data to determine professional development needs, and
- Discussing ways to support teachers as they acquire/refine teaching practices.

Professional Learning Community (PLC) Development

Through instructional leadership team training, school leaders will be empowered to model and grow PLCs across grade levels. Working through the steps outlined by Marzano et al. (2016), teams will recognize the power of balanced leadership with a growing understanding of when first-order change is necessary (using existing beliefs and values) and when second-order approach to barriers is necessary (creating new beliefs and values for transformative change). Developing the capacity for teams to do this work within the school system will lead to sustainable change.

Unit of Study Theme Integration

Over the last four years, District 196 has redesigned elementary curriculum, instruction and assessment to align with the theories of the Literacy Collaborative (LC). Through this process, inquiry units of study were developed to integrate the MN Academic Standards for ELA with the content standards for social studies, science, health and art. This core curriculum (see Appendix D for District 196 K-5 units of study and Appendix O for a sample unit map) is delivered through an inquiry framework (Fountas & Pinnel, 2006) in a two and half hour literacy block. Project STEMInspired will take the foundation of the District 196 units of study and integrate the themes across. All units are designed to promote student publishing and sharing. Embedding the leadership theme across the unit, but especially during publishing stage will allow students to present their ideas to a larger audience. Project STEMInspired will be outfitting the multi-purpose rooms with the audio visual equipment necessary to share publishing for a 21st century audience.

The plan for enhancing the units of study include district teaching and learning staff, magnet specialists from the other magnet schools, and various stakeholders coming together side-by-side to examine the current units and seek opportunities for additional texts, activities,

students experiences, community partner opportunities, and more that integrate and enhance the theme throughout the unit of study, thus differentiating the magnet school from the rest of the district. Staff members will also participant in multi-day magnet bootcamps during the summers focusing on: inquiry, technology integration, collaborative structures, 21st century skills and STEM habits of mind.

Equity

One way District 196 shows its commitment to equity is through principal engagement in the Institute for Courageous Principal Leadership offered by Minnesota State University at Mankato. Principals are part of a two year cohort examining practices that promote integration and challenge the persistence of the achievement gap. Through this work, leadership in District 196 was introduced to Dr. Yvette Jackson, the National Urban Alliance (NUA), and her work around the Pedagogy of Confidence (2011). Project STEMInspired is in negotiations with NUA and Dr. Jackson to work side by side with teams to take an honest look at how we are taking a strengths-based, whole child enrichment approach to accelerating the learning and status of all students. In conversation with Dr. Jackson, she encourages an audit/appreciative inquiry of the sites within the project using someone other than NUA and recommends St. Catherine's University. Upon receipt of the audit results, a two year customized training and coaching plan is developed with school core and instructional leadership teams and the district integration and equity departments. Yvette Jackson and her colleagues at NUA have one mission. Supporting principals in becoming pathfinder principals. "Principals who amass a team capable of cutting through negative and destructive forces; who place affirmation, inspiration, and mediation as the centerpiece of their belief and operating systems; and who use their strengths as architects, soul friends, muses, and ministers to cultivate the environment that enables their schools to flourish" (Jackson & McDermott, 2012).

This work will inevitably overlap with other components of the professional learning plan as we work to make equity explicit in all professional learning opportunities. Additionally, Project STEMInspired will examine the texts within each unit of study to ensure students see themselves in the literature represented. In one case, District 196 was struggling to find appropriate published literature to meet the MN Legislative requirement to include texts by and about Minnesota Native Americans. As a result, District 196 has commissioned texts to be written by local Minnesota tribe members.

Learning Summit Development

The idea of learning summits came from an integrated inquiry unit of study at one of District 196's middle schools where a multi-disciplinary unit implementing the physical science standards around energy with the informational text standards of English/Language Arts and reading. Sixth graders at Rosemount Middle School spent several weeks immersed in leveled texts on energy topics. The unit of study began with an all grade assembly exploring the recent agreement at the 2015 United Nations Climate Change Conference, COP 21. The Paris agreement which represented a consensus from more than 190 parties to reduce greenhouse emissions. During the unit of study, RMS sixth graders saw the agreement become legally binding on Earth Day, April 22nd, 2016, when 174 counties signed the agreement in New York (Sutter, 2016). "Students learned about renewable energy in science class, and they read nonfiction books about energy in English. They researched energy types and prepared presentations" (Hansen, 2016, ¶ 4). Throughout the unit of study, sixth graders participated in moonshot thinking as they developed innovative ideas to solve the problem of climate change. On May 20, 2016, the unit of study culminated in an Energy Summit. Almost entirely planned, advertised and executed by the 170 sixth graders who chose to part of the leadership team called the energizers, all sixth graders presented their learning either to a large group, small group or in

a science fair type booth. District 196 community members and RMS classmates heard their colleagues share grand ideas of raising money to build a water wheel on the banks of the Mississippi to power a school, to adding solar panels to the tops of the windmills so that solar energy can be captured to generate the blades in order for the windmills to operate wind or shine.

Project STEMInspired will implement one Learning Summit per trimester at each magnet school for students to exercise leadership skills, share innovative thinking, publish new learnings and partner with the community for exploratory opportunities. The various new spaces for outdoor learning, nature playground, -ology lab, maker's space, innovation station, Geeksquad Jr. mobile lab, and outdoor garden will be necessary for successful learning summits.

Theme Seminars

In order to effectively implement the themes of leadership, engineering, technology, environmental and health sciences into the sites for Project STEMInspired, staff will need opportunities to build their knowledge banks in each of these areas. To do so, Project STEMInspired will foster a community of learners amongst all staff by providing opportunities for adults to engage in their own learning. For example, in the summer of 2016 all staff will spend three days immersed the seven habits of highly effective people on a personal level as a part of *Leader in Me* training. Staff will reflect and grow in their understanding of what it means to "begin with the end in mind", "put first thing first", and "sharpen the saw" (Covey et al., 2006). In project year two, community partners and experts from the fields of engineering and environmental sciences will be invited to partner with the Teaching and Learning department and the district magnet team to provide opportunities for theme seminars where staff can engage in a learning opportunity to grow their own understandings within these fields. Project year three will explore engineering and health sciences in more depth.

MTSS and STEM Coach Training (Logic Model Resource)

Coaches need to resist the temptation to judge teachers. Instead, successful coaches take a progress-minded approach that celebrates growth from both the students and teachers. Coaches who believe they know more than the teachers, are better trained or care more about the students will always struggle to build relationships (Sweeney, 2011). In partnership with Lesley University and LC, District 196 provides teachers with information, tools and supports that enable teachers to meet the needs of each student and sustainably accelerate and deepen each student's learning. LC partnerships require at least a five-year commitment from each school or district. District 196 is a large district, so Literacy Collaborative District Trainers provide the initial 350-hour training course and coach each MTSS coach. During the year-long course, the MTSS coach learns how to implement data-driven instruction, data-driven coaching, and data-driven staff development.

STEM coaches partner with the MTSS coach for collective inquiry around learning theories, attend Cognitive Coaching training, and work closely with the math, science and magnet teams for professional growth. Math coaches come alongside individual teachers and PLCs to build capacity for growth in inquiry, constructivist and workshop approaches to instruction.

Data-informed Instruction

Year 1: MTSS coaches continue to teach half of their day and engage in their initial training (350 hours) with the district literacy trainers the other half of their day. This ensures continual application of research with children so MTSS coaches continue to build their expertise in data informed staff instruction. MTSS coaches collect data throughout the year for their high, medium and low level case study students. This allows for the MTSS coaches to

learn how to differentiate their instruction for the entire class while using their case study students as a compass.

Year 2: MTSS coaches begin training and coaching others in their building in data informed instruction through 40 hours of professional learning for all staff.

Years 3-5: MTSS coaches continue data informed professional development and coaching.

Data-driven Coaching

Coaches are trained in action research coaching. The coaches learn how to use an inquiry-based action research coaching cycle (figure 12) during their training year.

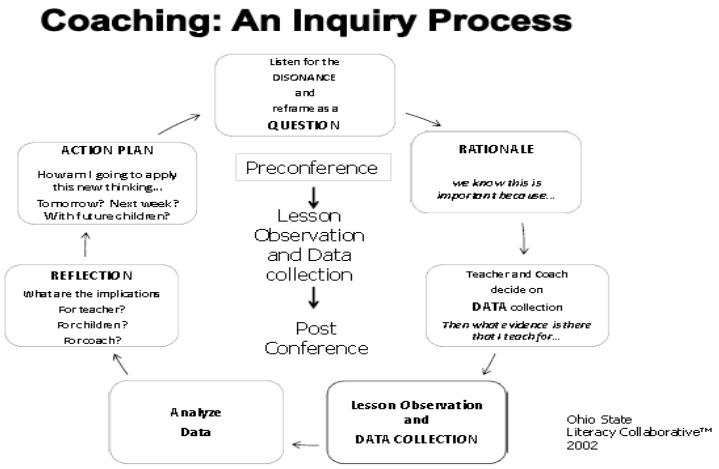

Figure 12. Ohio State Literacy Collaborative Inquiry Coaching Cycle

The cycle begins when the classroom teacher brings students to the center of the conversation to discuss. The coach, classroom teacher, and any other stakeholders (i.e. special education and Title I staff, English language teachers and gifted & talented teachers) evaluate the data on students with instructional gaps. The data is sorted into a template with columns that begins with *what students know*, *identifies what they need to know next*, moves to *an action plan for meeting those needs* and ends detailing *how we will teach the child to check themselves*.

From this data, a tight action research question is constructed so everyone understands the type of data that will be collected during the coaching cycle. Sample action research questions might be: *How often do Shawn, Zuri and Nani talk during interactive read aloud and are their questions and comments literal, higher-level thinking, or critiquing and analyzing? How similar is Shawn, Zuri and Nani's language during interactive read aloud and guided reading?* The team might add another question if the child is in an intensive intervention, such as: *How does Nani's language align between classroom guided reading and her leveled literacy intervention group?* Having a tight action research question before coaching starts, causes the teacher to go deeper with data-informed decision-making during teaching. The coach also records the classroom teacher's ability to monitor and adjust teaching based on new data coming in during the instruction.

(IV) The extent to which the proposed project is supported by strong theory (as defined in this notice).

Project STEMInspired Supported by Strong Theory

The Literacy Collaborative MTSS model is the school reform model District 196 has adopted. It is a model that has a strong research base and is founded upon many learning theories including:

- Balanced Literacy,
- Literacy Processing Theory,
- Reader Response Theory,
- Zone of Proximal Development,
- Mindset Theory,
- Constructivism/Inquiry,
- Adaptive Change Theory, and

- Professional Learning Communities.

Balanced Literacy and Literacy Processing Theories

Teaching children to read and write is a "complex process" (NRP, 2000, sect. 2-7). The National Reading Panel Report (2000), indicates that there is "no single key to success" (sect. 2-7) in literacy acquisition and teaching in only one form or manner does not "ensure that children will learn to read and write (sect. 2-7). Best practice in teaching reading has been highly debated for several years. Skills based instruction or phonics and whole language have been two widely used and discussed forms of teaching reading, but Vacca et al., (2012) contend that "teachers who use a more balanced or comprehensive approach to teaching reading will meet the needs of their students when their instructional decisions and practices reflect the interactive nature of the reading process" (p. 37). According to Vacca et al. (2012), balanced literacy instruction was developed to intertwine the two most widely used approaches: skills based and whole language instruction. Balanced literacy is defined as a practice of both skills-based curricula and whole language curriculum (Vacca et al., 2012). Literacy should not be taught in a manner that incorporates solely an isolated skills-process, but rather incorporate opportunities to include all of the components of the reading process to support the meaning-making and sense-making process of literacy (Clay, 1979, Lipson & Wixson, 2009; Swanson & Hoskyn, 1998; and Swanson & Vaughn, 2010). According to meta-analysis conducted by Swanson & Hoskyn (1998), using a balanced approach is an effective approach to teaching. Whereas a focus on skills-based instruction in isolation "may not be appropriate as processing components seldom act independently of other processes" (p. 306). Teaching literacy should be balanced and

incorporate all components indicated in NRP (NRP, 2000; Swanson & Hoskyn, 1998; & Vacca et al., 2012)

Marie Clay (1979, 1991, 2012) developed the *literacy processing theory* upon which *Reading Recovery*® is based. Several principals serve to guide the literacy learning and instruction. According to the Early Literacy division of the *Reading Recovery*® Council of North America, the following principals are critical.

- Reading and writing are complex problem-solving processes;
- Reading and writing are reciprocal and interrelated processes;
- Literacy learning involves reading and writing continuous text;
- Literacy learning involves continuous change over time;
- Children construct their own understandings;
- Children come to literacy learning with varying knowledge; and
- Children take different paths to literacy learning**.** Building on strengths makes it easy for children to learn. Learners extend their own learning (RRNCA, 2001-16).

Reader Response Theory

Transactional literary theory and reader response theory (Rosenblatt, 1975, 1978) has remained steadfast among the reading and literature disciplines despite the ever-changing modes of text. Even with the introduction of online reading, learning simulations and Internet research, most experts in the field return to the construct that an interactive relationship exists between the reader and the text. Rosenblatt states,

> The special meaning, and more particularly, the submerged associations that these words and images have for the individual reader will largely determine what the work

> communicates to him. The reader brings to the work personality traits, memories of past events, present needs and preoccupations, a particular mood of the moment, and a particular physical condition. These and many other elements in a never-to-be-duplicated combination determine his response to the peculiar contribution of the text (Rosenblatt, 1978 (pp. 30-31).

Rosenblatt (1978) offers two purposes for reading. One is "efferent" or informational reading where what is offered by the text requires the reader to acquire new knowledge such as facts and vocabulary. Most of the reading adolescents are required to do in school is "efferent" reading in content area classes such as math, health, science, social studies and business. Thus Project STEMInspired intends to begin the informational reading right away in kindergarten units of study.

The other purpose for reading is for the "aesthetic" experience. Rosenblatt argues that the primary purpose in "aesthetic" reading is to consider what the reader is doing and feeling as he is reading. The reader must pay close attention to the feelings, connections, and reactions as the text is experienced. Graves (2004) argues that while most adults spend a considerable amount of their reading time in texts for enjoyment, schools are not giving children adequate experience in reading for pleasure and examining what is happening, especially emotionally, as they read. In cases where "aesthetic" reading occurs, Rosenblatt (1978) contends that it is far more important to understand the reader than it is to understand the text. Because of the transactional nature, many literary works will not have one interpretation but instead readers will bring a variety of interpretations to the text.

Graves (2004) argues that too often the purposes for reading are confused. Students are asked to respond emotionally to a piece of informational text and offer a variety of interpretations or are asked to gather information regarding vocabulary and plot structures in a piece of literature that is intended to be read for "aesthetic" purposes. He cautions instructors to be cognizant of the purposes in order to fully realize the benefits of readers' response and

transactional literary theory. Rosenblatt (1978) stresses the importance of both types of reading and interaction but also emphasizes that students need assistance in differentiating between the two and understanding their purposes as they approach a variety of texts.

Zone of Proximal Development

Sociocultural Theory was originated and described by Russian scientist Lev Vygotsky (1978) in the early 1900s. The premise of this theory is twofold, one: experience, especially a child's exposure to a variety of cultural experiences adds to her realm of knowledge and allows for greater expansion of that knowledge and two: social interaction is a paramount contributor to a child's full cognitive development.

Vygotsky (1978) offers three important elements for instructors of reading within his sociocultural theory. First, a child develops and builds cognition through imitation. Students witness their science teacher walk them step by step through a lab and then emulate those steps on their own. Second, learning is interactive and involves scaffolded instruction from adults. Instructors must also consider a child's Zone of Proximal Development (ZPD) as the optimal point of learning that exists between what one can acquire independently versus what one is able to learn in cooperation with peers and adults. Students must also be able to consider their internal thought processes and be guided through procedures and processes important for knowledge acquisition. Finally, learning is social. Graves (2004), points out "Face-to-face discussion in which students really strive to make themselves understood and to understand others—is a mainstay of learning" (p. 438).

Mindset Theory

The concept of 'mindsets' has been developed by Carol Dweck and her associates and describes a 'world from two perspectives' (Dweck, Chiu and Hong 1995; Dweck 2006). These two perspectives are the 'fixed mindset' (or entity theory) and the 'growth mindset' (incremental

theory). Dweck and colleagues have extensively studied the power of a belief that it is possible to increase intellectual ability. Her team have evidence to illustrate those who believe their intelligence can grow over time "acquire deeper knowledge and do better—especially in hard subjects and in negotiating difficult school transitions—compared with equally able students who believe their intelligence is a fixed trait" (Dweck, 2016, p. 38). Fostering a growth mindset for learners of all ages is foundational in the LC capacity building MTSS model.

Constructivism

Constructivism is a philosophy of learning founded on the premise that, by reflecting on our experiences, we construct our own understanding of the world we live in. John Dewey (1938, 1997) is often touted as the philosophical founder of this approach. Bruner(1986) and Vygotsky (1978) contributed to the development of the theory in both cognitive and social constructs. Constructivism proposes authentic, real world learning filled with inquiry, study, ponder and experimentation. There are several guiding principles of constructivism:

1. Learning is a search for meaning. Therefore, learning must start with the issues around which students are actively trying to construct meaning.
2. Meaning requires understanding wholes as well as parts. And parts must be understood in the context of wholes.
3. In order to teach well, we must understand the mental models that students use to perceive the world and the assumptions they make to support those models.
4. The purpose of learning is for an individual to construct his or her own meaning, not just memorize the "right" answers and repeat someone else's meaning.

Adaptive Change

Closing achievement gaps is a goal both nationally and locally. While the results of the National Assessment of Educational Progress (NAEP) show some progress toward meeting this

goal, the results are more from Black and Hispanic students showing larger gains than White students causing a small narrowing of the gap. Only the White-Hispanic gap in mathematics at age nine has not shown significant change. The gender gaps are narrowing in reading because male students are making larger gains than females and vice versa. Ultimately, the gap may be narrowing but the bar is not being raised (NCES, 2012). In order to do so Waters, Marzano and McNulty (2003) suggest leaders must enact a balance of technical and adaptive leadership in order to effectively improve student achievement. Gaps exist not because of a lack of intention or effort but possibly a misguided focus. Daly and Chrispeels (2008) argue, "reform that closes the gap requires new and different kinds of school leadership" (p. 42).

First-order changes are focused on incremental adjustments to current practice in order to improve efficiency and effectiveness of a task (Korach, 2011). First-order changes typically leave underlying beliefs unchallenged. This type of technical change is helpful when engaged in continuous improvement upon which sound vision, beliefs and values is institutionalized. For true 21st century education reform, second-order change will "challenge traditional classroom culture as well as beliefs about the teaching-learning process" (Korach, 2011, p. 48).

District 196 decided to partner with The Ohio State University in 2012 and Lesley University in 2014 for implementation of the Literacy Collaborative in an effort to shift to second-order change. Appendix P shows the paradigm shift for literacy instruction, learning, professional development, and coaching.

Professional Learning Communities

"The collective ideas about effective professional collaboration . . .along with those about reflective practice . . .formed the foundation for the concept of *professional learning communities*" (Marzano et al., p. 5). Throughout the 1990s, many researchers contributed to the

evolving theory surrounding PLCs. Figure 13 shows a summary of the studies supporting the many characteristics of an effective PLC (Marzano et al., 2016).

Characteristic	Supporting Studies
Mutual support and trust among teachers	Bolam, McMahon, Stoll, Thomas, & Wallace, 2005 Fulton & Britton, 2011 Hord, 2009
Shared vision and values	Bolam et al., 2005 Fulton & Britton, 2011 Hord, 2009 Timperley, Wilson, Barrar, & Fung, 2007
Focus on improving student learning	Bolam et al., 2005 Fulton & Britton, 2011 Hord, 2009 Timperley et al., 2007
Focus on teacher growth and professional development	Annenberg Institute for School Reform (AISR), 2004 Bolam et al., 2005 Hord, 2009 Louis et al., 1995
Intentional and systematic support of the collaborative model	Bolam et al., 2005 Fulton & Britton, 2011 Hord, 2009 Louis et al., 1995 Morrissey, 2000 National Center for Literacy Education (NCLE), 2013
Inquiry-based approach and use of evidence	AISR, 2004 Fulton & Britton, 2011 NCLE, 2013 Timperley et al., 2007

Figure 13. Characteristics of Effective PLCs, from *Collaborative Teams that Transform Schools*, (Marzano, et. al. 2016).

Marzano and his colleagues have analyzed the studies on the impacts principal behavior, the district (leadership, policies and practices), teacher professional communities, instructional practices and school context all have on student achievement. Drawing on the research and theory, they provide a blueprint for high-leverage adaptive change (Marzano et al., 2016). They present a new approach to answering DuFour and his colleague's four critical questions and add *two new ones*. 1. What is it we want our student to know? 2. How will we know if our students are learning? 3. How will we respond when students do not learn? 4. How will we enrich and extend the learning for student who are proficient? 5. *How will we increase our instructional competence?* And 6. *How will we coordinate our efforts as a school?*

Project STEMInspired is committed to the collective inquiry necessary to address all six of these questions and will spend the next three years committed and focused to this endeavor.

Quality of Management Plan

(I)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 Project STEMInspired outcomes are aligned with the purposes of the Magnet Schools Assistance Program (MSAP). Specific objectives and performance measures (Tables 25-29) follow the MSAP program purpose they address.

Purpose of MSAP Program: The MSAP provides grants to eligible local educational agencies (LEAs) and consortia of LEAs to support magnet schools under an approved, required or voluntary, desegregation plan. By supporting the ***development and implementation of magnet schools that reduce, eliminate, or prevent minority group isolation****,…*

Table 25. Objective 1 - Build capacity in evidence-based strategies to eliminate, reduce, or prevent minority group isolation in the targeted schools without negatively impacting feeder schools.

M. 1.1 & 1.2	By Year 3, decrease minority group isolation of Black students at EP and OR at least 6 percentage points (See Table 3: Enrollment Data-Magnet Schools).
M. 1.3	By Year 3, increase the number of applications received for each magnet school by at least 70.
M. 1.4	EP and OR will develop and update a plan for ensuring regular education classrooms and before and afterschool programs are reflective of the racial, gender, and socioeconomic diversity of the school population.
M. 1.5	EP and OR enrollees will not change enrollment percentages of major racial and ethnic subgroups at any MSAP feeder school by more than ± 2 percentage points.

Purpose of Program: The MSAP… program resources can be used in pursuit of the objectives of the Elementary and Secondary Education Act of 1965, as amended (ESEA), which supports State and local ***efforts to enable all elementary and secondary school students to achieve high standards.*** *In particular, the MSAP provides an opportunity for eligible entities* ***to provide students from varied backgrounds with the educational benefits of diversity and equitable access to a high-quality education that will enable all students to succeed academically.***

Table 26. Objective 2 - To design and develop innovative educational methods and practices that promote diversity, increase choice and ensure students gain 21st century skills.

M. 2.1	90% of magnet teachers at EP and OR by Year 3 will agree with the following statements by Year 3, *1) my instruction includes innovative, challenging instructional materials; 2) magnet content promotes diversity and choice; 3) I use strategies that encourage students from different racial, ethnic, and socio-economic groups to interact; 4) my magnet school provides students with a resource-rich, interactive learning environment; and 5) our magnet curriculum promotes the development of 21st century skill.*
M. 2.2	85% of magnet teachers at EP and OR by Year 3 will indicate consistent use of three (3) or more MSAP site-based identified "best practices".
M. 2.3	By Year 3, 85% of students at EP and OR will agree with the following statements: *In my classroom(s), 1) students work together in groups; 2) I have worked with most of the students in my classroom (core classes); 3) my teacher(s) allows me to demonstrate my learning through projects and/or class presentations; 4) I feel my teacher(s) care about me and about my fellow classmates; and 5) I am developing 21st century skills*.
M. 2.4	By Year 3, 75% of classroom observation rubrics will show evidence of the following: *(1) classrooms that provide a resource-rich, interactive learning environment and (2) that are equipped with computers and other technology; (3) teachers using MSAP identified research-based "best practices" and strategies; (4) instruction that promotes diversity and encourages students from different racial, ethnic, and socio-economic groups to interact; and (5) students who are demonstrating 21st century skills.*

Table 27. Objective 3 - To provide professional development for magnet school teachers related to implementing high-quality educational programs, increasing achievement for all students, improving instructional practices, and ensuring program sustainability.

M. 3.1	By Year 3, 90% of teachers will indicate project staff development activities: *1) increase their content knowledge, 2) improve their instructional skills, 3) increase innovative practices, and 4) will help sustain the magnet program.*
M. 3.2	By Year 3, 90% of teachers will agree with the following statements: *1) I participate in Professional Learning Communities (PLC); 2) PLCs meet regularly; 3) PLC team members reinforce strategies learned in staff development; 4) PLC team members collaborate; 5) PLC teams develop theme-related curriculum units; and 6) the work of my PLC supports magnet sustainability.*
M. 3.3	By Year 3, 75% of classroom observation rubrics will show evidence of the following criteria: *(1) challenging instructional materials; (2) magnet units aligned with state standards; and (3) (when technology is used in a lesson) measures of technology integration within the District 196 Learning and Technology Framework.*
M. 3.4	By Year 3, 90% of classroom teachers will participate in a minimum of 90 hours annually of MSAP-related training and/or coaching.
M. 3.5	Annually, scheduled professional development will provide a minimum of 10 hours in the following five areas: theme strands, magnet-identified "best practices," core instructional programs, cultural competency, and using technology for instruction.
M. 3.6	By Year 3, the percentage of administrative team members participating in a minimum of 60 hours will increase to 75%.
M. 3.7	By Year 3, the percentage of classroom teachers submitting an electronic form describing how they used technology for instruction will increase to 60%.

Table 28. Objective 4 - To ensure parents and community members are actively involved in project planning, implementation, and decision-making.

M. 4.1	By Year 3, the percentage of parents who indicate that the magnet program provides opportunities to: 1) participate in magnet planning, 2) have an active role in magnet implementation, and 3) provide input into school decision-making will increase to 70%.
M. 4.2	The number of parents attending theme-related parent events will increase 20% from baseline data collected.
M. 4.3	The number of parents responding to electronic or paper requests for input regarding magnet planning or implementation ideas will increase 20% from the established baseline.
M. 4.4	By Year 3, the percentage of parents who think that community partners 1) are active in the design and implementation of the magnet program, and 2) they help the school ensure relevance and extend learning into the 21st century will increase 70%.
M. 4.5	By Year 3, the percentage of parents participating in focus groups who think that parents and magnet community partners are given opportunities to be active in magnet planning, implementation, and decision-making will increase to 70%.
M.4.6	Beginning in project Year 2 (2017-189), the magnet theme and instructional model will be incorporated into each school's improvement plan.

Table 29. Objective 5 - To increase percentages of all magnet students, including those from major racial and ethnic subgroups, who meet State proficiency targets in reading/language arts and mathematics.

M. 5.1	Proficiency rates for major racial and ethnic groups on Minnesota's reading/ language arts state assessment (MCA) will increase over the baseline established in 2016 by 4%.
M. 5.2	Proficiency rates for major racial and ethnic groups on Minnesota's mathematics state assessment (MCA) will increase over the baseline established in 2016 by 4%.

Project STEMInspired will use resources and personnel specifically to address the objectives of the project. The proposed funds requested are $1,299,856.57 for the first year, $1,770,154.59 in year two, and $1,552,437.59 in year three. Between resources allocated by District 196 and MSAP funding, there will be an adequate budget to address the Project STEMInspired objectives and complete the proposed activities. The project will serve over 1088 students each year of the grant, increasing to a total of 3498 over the life of the grant. The per-pupil costs, an average of approximately $3964 over the three years of the project, are reasonable to implement a high quality program design and are sufficient for a project of this size and importance. All project expenditures will be monitored by the finance department of District to ensure that purchases meet purchasing guidelines for both quality and economy.

Defined Responsibilities

The District Magnet Leadership and site-level Instructional Leadership Teams will have oversight responsibilities related to the effective utilization of resources and personnel. The management plan for Project STEMInspired is rooted in the principles of second order change. Through leadership from the magnet coordinator and the project manager, Project STEMInspired implementation will ultimately be carried out by the schools. In figure 14, the organization chart is illustrated.

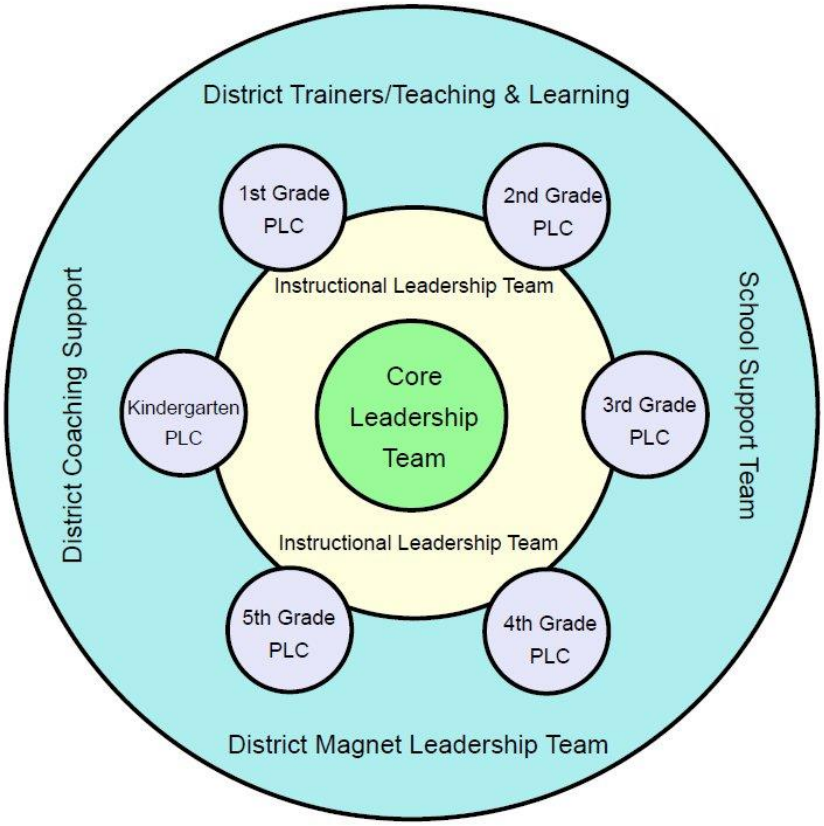

Figure 14. Project STEMInspired Organizational Chart

The district magnet leadership team, consisting of the district magnet coordinator, district magnet TOSA, Project STEMinspired manager, K-12 STEM TOSA, district math coaches, magnet STEM coaches, magnet MTSS coaches, and school magnet TOSAs provide direction, influence and alignment to the work. The district coaching support and district trainers/Teaching and Learning illustrated in figure 14 consist of district Literacy Collaborative coaches, Leveled Literacy coaches, and Teaching and Learning staff who come along side and coach school level MTSS and STEM coaches as well as intervention teachers to accelerate student achievement. Additionally the team supports various stakeholder groups including gifted and talented, English learners and special education. The school support team consists of the superintendent, directors of elementary education, special education and teaching and learning plus coordinators from special education, and teaching and learning who meet with the select school's district team

quarterly to support implementation of their continuous improvement plans. Both magnet schools in Project STEMInspired will be included in the schools who receive support from this team throughout the three years of the project.

Through the support and training stemming from the district level, the capacity of the core leadership team (principal, administrative assistant, magnet TOSA, MTSS coaches, and STEM coach) along with the instructional leadership team (core leadership members plus one member from each stakeholder group of classroom teachers from each level, special education, gifted/talented, media, specialists, and English learners) is built. Ultimately, the instructional leadership is responsible for ensuring alignment, remaining relentlessly committed to the project outcomes and striving for innovative implementation.

Timelines and Milestones

The table below shows the manner in which the MSAP funds align to goals and objectives. See Quality of Project Evaluation for more detail on the project management plan and grant application monitoring process.

Table 30. Three-Year Timeline and Milestones for Project STEMInspired Implementation

Year 1 (2016-17)			
Milestones	Timeline	Personnel	Aligned Objective(s)
Construct new classroom and innovative lab spaces	August 2016-June 2017	District and Contractors	Objective 1, 2, 4
Implement Instructional Leadership Teams and PLCs	August 2016-June 2017	District Support Team and Site Instructional Leadership Teams	Objective 2, 3, 5

Leader in Me Training	June (OR) and July (EP) 2016	FranklinCovey Consultants	Objective 2, 3, 5
Begin marketing and recruiting plan	August 2016 – January 2017	District Magnet Leadership and Site Magnet TOSAs	Objective 1, 4
Equity Audit/Appreciative Inquiry	September-October 2016	District Support Team, District Magnet Leadership Team, and Site Instructional Leadership Teams	Objective 1, 2, 3, 4, 5
Develop Mission and Vision for each site	September- October 2016	Site Instructional Leadership Teams, District Magnet Leadership Team, Students, Parents/Community	Objective 2, 3, 4, 5
Hire new Project STEMInspired staff	November 2016	District Magnet Leadership and Building Principals	Objective 2, 3, 4, 5
Identify and purchase magnet related materials, equipment, and supplies	November 2016-March 2017	Site Instructional Leadership, District Clerical Support, and District Magnet Leadership Team	Objective 2, 3, 4, 5
Establish before and afterschool programming	November 2016-June 2017	Site Instructional Leadership Teams, Magnet TOSAs, Community Partner Liaisons	Objective 2, 4, 5
Spotlight on Magnet School tours and	November 2016-January 2017	District Magnet Leadership Team, Magnet TOSAs,	Objective 1, 4

Informational Nights		Community Partner Liaisons	
Magnet Lottery	January 2017	District Magnet Leadership Team	Objective 1
Grand Opening of Family Engagement Centers	February 2017	District Magnet Leadership Team, Magnet TOSAs, Community Partner Liaisons	Objective 4
Unit of Study Theme Integration	Once per trimester	District Magnet Leadership Team, Coaches, PLCs, outside experts	Objective 2, 3, 4, 5
Learning Summit Development	One per year trimester per school	District Magnet Leadership Team, Coaches, PLCs, and students	Objective 2, 3, 4, 5
Attend MSA National Conference	May 2017	District Magnet Leadership Team, 4 staff members from each Project STEMInspired site	Objective 3
Year 2 (2017-18)			
Ongoing Leader in Me Training	June-July 2017 and during school year	FranklinCovey Consultants and Site Instructional Leadership Teams	Objective 2, 3, 5
Ongoing Core and Site Leadership Training and PLC development	July 2017-June 2018	District Support Team and Site Instructional Leadership Teams	Objective 2, 3, 5

Move into new classrooms and organize new lab spaces	June-September 2017	Teachers, Site Instructional Leadership Teams, Magnet TOSAs, Community Partner Liaisons	Objective 1, 2, 3, 4, 5
Collaborate on creation of Nature Playgrounds	Fall 2017 and Spring 2018	Site Instructional Leadership Teams, Magnet TOSAs, Community Partner Liaisons, Parents and Community Partners	Objective 2, 4
Identify and purchase magnet related materials, equipment, and supplies	September 2017-March 2018	Site Instructional Leadership, District Clerical Support, and District Magnet Leadership Team	Objective 2, 3, 4, 5
Design and Purchase Flexible Learning Spaces	September 2017-December 2017	Site Instructional Leadership, District Clerical Support, and District Magnet Leadership Team	Objective 2, 3, 4, 5
Spotlight on Magnet School Tours and Informational Nights	November 2017-January 2018	District Magnet Leadership Team, Magnet TOSAs, Community Partner Liaisons	Objective 1, 4
Magnet Lottery	January 2018	District Magnet Leadership Team	Objective 1
Ongoing Unit of	Once per trimester	District Magnet Leadership	Objective

Study Theme Integration		Team, Coaches, PLCs, outside experts	2, 3, 4, 5
MTSS Coach Training	2017-2018 school year	District Support Team and Site Instructional Leadership Teams	Objective 2, 3, 5
Explicit Equity Training	Embedded in PLC work	District Support Team, District Magnet Leadership Team, and Site Instructional Leadership Teams, outside consultant	Objective 1, 2, 3, 4, 5
Theme seminars	2017-2018 school year	District Magnet Leadership Team, Coaches, outside experts	Objective 2, 3, 4, 5
Attend MSA National Conference	May 2018	District Magnet Leadership Team, 4 staff members from each Project STEMInspired site	Objective 3
Year 3 (2018-19)			
Ongoing Leader in Me Training	June-July 2018 and during school year	FranklinCovey Consultants and Site Instructional Leadership Teams	Objective 2, 3, 5
Ongoing Core and Site Leadership Training and PLC development	July 2018-June 2019	District Support Team and Site Instructional Leadership Teams	Objective 2, 3, 5
Identify and purchase magnet related	September 2017-March 2018	Site Instructional Leadership, District Clerical Support, and	Objective 2, 3, 4, 5

materials, equipment, and supplies (i.e. wearable technology,		District Magnet Leadership Team	
Design and Purchase Flexible Learning Spaces	September 2017-December 2017	Site Instructional Leadership, District Clerical Support, and District Magnet Leadership Team	Objective 2, 3, 4, 5
Install classroom sound systems	November 2018		Objective 2, 4
Spotlight on Magnet School Tours and Informational Nights	November 2018-January 2019	District Magnet Leadership, Magnet TOSAs, Community Partner Liaisons	Objective 1, 4
Magnet Lottery	January 2019	District Magnet Leadership Team	Objective 1
Ongoing Unit of Study Theme Integration	Once per trimester	District Magnet Leadership Team, Coaches, PLCs, outside experts	Objective 2, 3, 4, 5
Student Centered Coaching (math, integration, literacy)	Embedded throughout school year	District and site coaches	Objective 2, 3, 5
Explicit Equity Coaching	Embedded in PLC work	District Support Team, District Magnet Leadership Team, and Site Instructional Leadership	Objective 1, 2, 3, 4, 5

		Teams, outside consultant	
Theme seminars	2018-2019 school year	District Magnet Leadership Team, Coaches, outside experts	Objective 2, 3, 4, 5
Attend MSA National Conference	May 2019	District Magnet Leadership Team, 4 staff members from each Project STEMInspired site	Objective 3
Expand business and other partnerships to ensure sustainability	2018-2019 school year	District Magnet Leadership Team, Site Instructional Leadership Teams, parents	Objective 1, 2, 3, 4, 5

(II)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.

District 196 has strong partnerships with local government, businesses, nonprofit organizations and higher education. District 196 MSAP letters of support demonstrate the engagement and enthusiasm regarding these commitments. Increasing the diversity of perspectives through staff, community and family involvement is a priority in all work across the district, including in the implementation of Project STEMInspired because District 196 believes:

- Partnerships and collaboration enhance educational programming;
- A culture of innovation and continuous improvement prepares students to be college or career ready; and
- An informed and engaged community guides effective decision-making.

Along with a continued goal of delivering a high-quality instructional program that anticipates and meets the needs of all learners, District 196's strategic plan includes educational equity and partnerships.

Table 31. Strategic Plan Elements for Educational Equity

Educational Equity
Implementing a systemic process that increases achievement for all students by addressing equitable access to opportunities in our schools and programs • Increase cultural proficiency across the district • Increase access and participation for all students in co-curricular activities and learning opportunities • Ensure access and increase participation in programs that prepare students for college • Develop a systemic process to recruit and retain diverse and culturally proficient staff to reflect the diversity of the student population • Distribute resources for schools based on multiple factors including student needs

Table 32. Strategic Plan Elements for Partnerships

Partnerships
Develop and implement sustainable strategies to increase collaboration between the district and community partners • Establish a structure that will support new and existing partnerships • Increase partnerships by enhancing relationships among schools and between schools and the community

STEMInspired will allow for the expansion of partners to engage and participate in the day-to-day implementation of the project objectives. The Project Director, Tony Eatchel, will have the responsibility of managing and coordinating the project with assistance from the District Magnet Coordinator, Dr. Cathy Kindem. These individuals will join the district magnet leadership team, to work closely with the 59-member district Community Collaboration Council

(CCC) appointed to develop and oversee the Integration and Educational Equity Plan. They will also work with the 21-member district-level magnet steering committee, consisting of all magnet principals, including Scott Thomas, the former executive director of Magnet Schools of America (MSA), directors of elementary education and teaching and learning, representatives from transportation and student information, and the district equity and integration coordinator. In additional to district-level groups, the district magnet leadership team will collaborate with the site-based instructional leadership teams, including the magnet teachers on special assignment, coaches, district cultural liaisons, and the new community partner liaisons, to assist in community outreach and monitoring the project implementation.

Project STEMInspired will thrive only with diverse viewpoints. The district Community Collaboration Council, district magnet steering committee and site-based parent associations currently have members with diverse perspectives. The creation of family engagement centers and new community partners for magnet programming will add additional voices with new perspectives.

Katherine Phillips (2014), a Professor of Leadership and Ethics and senior vice dean at Columbia Business School, asserts,

> The fact is that if you want to build teams or organizations capable of innovating, you need diversity. Diversity enhances creativity. It encourages the search for novel information and perspectives, leading to better decision making and problem solving. Diversity can improve the bottom line of companies and lead to unfettered discoveries and breakthrough innovations. Even simply being exposed to diversity can change the way you think (¶ 6).

Scott Page, a professor of complex systems, political science and economics (as cited by Folk-Williams, 2010) also provides a basis for the value of diversity for groups. He states, "Differing ways of looking at the world, interpreting experience, solving problems and predicting future possibilities work together to produce a distinctive mental tool set. Groups with

this sort of variety consistently outperform groups working with a single problem-solving perspective" (¶ 5).

The district's partnerships between the current and new magnet schools is strong: resources are shared, building staff support each other's family events, ideas and knowledge flow between teachers and students from different grades mentor and share their learning at other schools. This model will be expanded.

At the school sites, frequent communication with families is key to ensuring that a diversity of perspectives is encouraged and heard. It is important that written communications are translated and interpreters are present at meetings and events, as well as at student conferences. The importance of the cultural liaisons being both informed of and a part of the school operations and activities is paramount to getting new families involved and giving voice to all.

Pre-established inclusive district councils and committees, as well as project objectives for increased parent and community involved in the magnet programming implementation, will allow for diversity to improve all collaborative problem solving around integration strategies and will drive new innovations for leadership development and STEM learning at Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences.

Quality of Personnel

Introduction

The management of Project STEMInspired will be a collaborative process involving a side-by-side partnership between district and school-level personnel. District 196 has been committed to magnet schools as a proven method for reducing minority isolation and the longstanding commitment is evident in the district funded personnel. However, without the

MSAP funds, District 196 will not be able to achieve the ambitious World's Best Workforce (WBWF) goals as well as the Minnesota Department of Education's directive to reduce minority group isolation at Echo Park Elementary School of Leadership, Engineering and Technology and Oak Ridge Elementary School of Leadership, Environmental and Health Sciences. The MSAP award would allow for an additional Multi-Tiered Systems of Support (MTSS) coach; the addition of a STEM coach and a Community Partner Liaison at each school; clerical and bookkeeping support, a portion of the Magnet Project Director's salary so she can devote 20% of her time to this project, and a full time STEMInspired project manager to ensure fiscal responsibility and implementation of the project plan. See Table 33 for District funded versus MSAP funded positions.

Table 33. District 196 versus MSAP funded staff

District or Building funded staff	**MSAP funded staff**
District Teaching and Learning Coordinator for Math, Science, STEM, Magnet and Innovative Programming (.8 FTE)	District Magnet Coordinator (.2 FTE)
Coordinator of Integration and Equity	STEMInspired Project Manager (1.0)
District level Magnet School Teacher on Special Assignment (TOSA); 1 per site	Project Secretary (.5 FTE)
District Literacy Collaborative Trainer	Bookkeeper (.2 FTE)
2 School level Magnet School TOSAs; 1 per site	2 MTSS Coaches (.5 FTE); 1 per site

Cultural Family Advocates	2 STEM Coaches (.5FTE); 1 per site
2 MTSS Coaches (.5 FTE); 1 per site	2 Community Partner Liaison; 1 per site
4 District Math Coaches	
K-12 STEM Lead Teacher	
Instructional Leadership Team	
Wrap around support from Teaching and Learning, Special Education, Elementary Education departments as well as the Superintendent.	

Staff members responsible for the administration, oversight and implementation of Project STEMInspired have proven records in the components of this project's design: *re-thinking school leadership teams*; *developing strong Professional Learning Communities (PLCs); fostering trust between and amongst learning teams; and implementing a research-based, theme integrated, capacity-building MTSS model.* Further, select personnel have experience in *desegregation strategies, previous magnet program implementation, hiring and training coaches for student-centered coaching,* implementing *STEM principles* and *growing parent and community partnerships with both magnet schools communities.*

(I)The project director (if one is used) is qualified to manage the project;

Dr. Cathy Kindem, Teaching and Learning /District Magnet Coordinator

Dr. Cathy Kindem currently serves as the Teaching and Learning Coordinator for ISD 196. In this position, she oversees both STEM and magnet programs as well as business and community partnerships. Dr. Kindem is extensively qualified to manage Project STEMInspired. Her experience is diversified across school and district levels with a special focus on supervising the implementation of the varied needs of magnet schools. These needs include the development of effective enrollment strategies, curriculum, professional development and marketing. Dr. Kindem knows how to realize the mission of Magnet Schools of America by *providing leadership for high quality innovative instructional programs that promote choice, equity, diversity, and academic excellence for all students.* As a teacher at Diamond Path when they began their journey to becoming a magnet school with an International Studies theme, to being a Science Specialist at Cedar Park STEM elementary school, to winning the esteemed Presidential Award for Excellence in Mathematics and Science Teaching, Dr. Kindem is an outstanding educator and instructional leader. As we enter a volatile time in education where expectations are high, 21st century learning and teaching are expected and achievement gaps must be narrowed, instructional leadership is paramount, and Dr. Kindem can deliver.

Under Dr. Kindem's leadership, in 2014 Apple Valley High School was granted the U.S. Department of Labor's Youth CareerConnect grant for $3 million. AVHS is one of just 24 schools in the United States, and one of two in Minnesota to receive the funding for high school redesign. In the fall of 2015, Valley Middle School of STEM began their full Magnet implementation. Dr. Kindem has an understanding of the importance of community and business partnerships, the necessity of time and space for innovative thinking and the discernment for knowing when to push and when to be patient in order to achieve desired outcomes.

Most importantly, Dr. Kindem knows how to build healthy learning teams. This skill will be imperative for Project STEMInspired. Both new magnet schools will need a stable leader who can help them see how magnet programming aligns with and fits together with all the work they have already done around integrated units of study, alignment of interventions and stakeholder/scheduling meetings for advancing students. Dr. Kindem is able to see clearly the connections between the work of the Literacy Collaborative, the learning and technology framework, the aspirations for mathematics and science education and culturally responsive instruction, all while building capacity in teams through a growth mindset. Dr. Kindem's dedication to the effective coordination and collaboration of STEM and magnet schools gives her an understanding of the school choice movement that will prove very valuable.

Tony Eatchel, Project STEMInspired Manager

Tony Eatchel currently serves as the District's Magnet Schools and Innovative Programs TOSA. In this position, Tony is responsible for supporting and providing assistance to magnet schools related to curriculum development, staff training and school choice enrollment policies and processes. He also works toward furthering student integration and educational equity by collaborating with district departments and the District 196 community. Eatchel has nine years of experience working as the technology specialist at Cedar Park Elementary STEM Magnet School, which gives him invaluable experience understanding and working with educators within a magnet school environment. When District 196 was notified that a plan must be developed to address the two recently racially isolated elementary schools, district leadership and school board chose magnet programming as the proven desegregation strategy. Eatchel was hired to assist preparing both elementary schools to transition to magnet schools by the fall of 2016. Eatchel has modeled the side-by-side leadership of transformative systems. Eatchel currently works with

all six magnet schools in the district. If awarded the MSAP grant, Eatchel will transition into the role of Project STEMInspired manager, focusing his leadership on the two new magnets to ensure all outcomes are achieved. His current role of District's Magnet Schools and Innovative Programs TOSA will be posted and funded by the district.

(II) Other key personnel are qualified to manage the project; and

District Personnel

Superintendent Jane Berenz

Jane Berenz currently serves as superintendent for Independent School District 196. In this role, she provides excellent leadership rooted in classroom and district level experience. During Jane's tenure as ISD 196's Director of Teaching and Learning, Berenz developed the District's first Integration and Educational Equity Plan to comply with the Minnesota Desegregation Rule. Berenz has a wealth of experience overseeing the diversity program within the District and is personally responsible for the creation of the Teachers of Color program, which focuses on recruiting and retaining teachers of color within District schools. Berenz's experience as a K-12 diversity coordinator as well as her experience teaching at Echo Park Elementary give her a unique perspective on and understanding of the opportunities and challenges magnet schools present.

Sally Soliday, Director of Elementary Education

Sally Soliday currently serves as the Director of Elementary Education for ISD 196. Soliday brings a wealth of experience working as a classroom teacher, a school principal, and a supervisor of the District's elementary principles. By providing effective leadership and guidance to all of the District's elementary schools, including magnet schools, Soliday has experience developing leadership across a variety of settings. In addition to providing guidance

to school principals, Soliday serves as a member of the Superintendent's cabinet to problem-solve and assist in district level concerns and initiatives. Soliday plays a crucial role in supervising the planning, construction and opening of new elementary facilities. Due to her varied experience, Soliday brings a depth of knowledge critical to the effective development of new schools.

Carita Green, Integration and Equity Coordinator

Carita Green currently serves the District as the Coordinator of Integration and Equity. Green works to continually ensure cultural inclusion and close the achievement gap that exists between white students and students of color. Green brings a wealth of experience coordinating equitable learning opportunities and developing culturally competent staff within District schools. Green has experience in both equity as well as counseling which gives her valuable insight into the needs and challenges facing marginalized students. Due to her experience ensuring equitable opportunities for all students, Green brings a valuable perspective to conversations around desegregation strategies and equitable school choice options.

Beth Swenson, District Literacy Collaborative Trainer

Beth Swenson currently serves as the District Literacy Collaborative Trainer. In this role, Beth brings a wealth of expertise in effective coaching models to the PreK-8 level. Swenson is the only Literacy Collaborative Trainer in the United States certified to train coaches in the Literacy Collaborative capacity building MTSS model, PreK-8. Swenson has had extensive training in the Literacy Processing Theory (Clay, 1979, 1991, 2001) and using a strengths-based approach to shifting the literacy trajectory of all learners. More impressive, Swenson has invested her life in learning how to create and maintain highly effective educational systems. Swenson uses her expertise from her certifications as a trainer for Myers-Briggs, LIFO, Five

Functions of a Cohesive team, Cogg's Ladder Team Development, Learning Modalities, Kolb's Adult Learning Theory, and Experiential Learning Cycle to inform the training of Instructional Leadership Teams at the district level and in all 18 elementary schools, six middle schools, one level IV special education setting, and one alternative learning center. Her return on investment study (site) illustrates her commitment to the human performance improvement model, continuous improvement and a focus on results.

Megan Pershica, District Literacy Collaborative Specialist

Megan Pershica was hired by District 196 in July 2012 because of her extensive coaching experience in the Minneapolis Public Schools. She began in District 196 as a Literacy/RTI (MTSS) coach for part of her first year, but quickly moved to co-leading the roll out of the MTSS model Prek-6. She was trained at Lesley University in 2014-15 to be a District Literacy Collaborative Trainer and trained her first class of District 196 MTSS coaches during 2015-16. Pershica;s exceptional communication skills, strong educational leadership qualities, extensive literacy theory and applied experience, and in depth work with District 196's Literacy Collaborative MTSS model will be invaluable to Project STEMInspired.

Dr. Jennifer McCarty Plucker, Teaching and Learning Coordinator

Dr. Jennifer McCarty Plucker currently serves as the Teaching and Learning Coordinator of ISD 196. She oversees a multitude of programs within the District, including English Learner and literacy programming, while simultaneously working to build capacity for multi-tiered systems of support within district schools. Dr. McCarty Plucker has three years of experience providing leadership with Response to Instruction/Response to Intervention (RtI2) processes across 31 schools, which gives her valuable insight into how best to reach all learners in a classroom. In addition, Dr. McCarty Plucker brings with her 6 years of literacy consulting

experience as well as practice as a classroom teacher. These varied leadership roles as well as her extensive research into the implementation of reading intervention programs give Dr. McCarty Plucker a valuable outlook on how to best implement differentiated learning within a school setting.

Paul Olson, K-12 STEM TOSA

Paul Olson currently works as the K-12 STEM Lead Teacher and as a Secondary Math Coach. As a classroom teacher, Olson focused on STEM goals while co-designing a standards-based grading model with use of RTI to increase student achievement. Olson currently facilitates K-12 STEM Pathway program development and provides district schools with supplemental STEM resources to reinforce standards. Both Olson's passion and experience are grounded in the development and instruction of STEM content in and out of the classroom, making him a valuable asset to both new STEM magnet schools.

Building Personnel

Cindy Magnuson, Principal

Prior to being hired as the principal of Oak Ridge Elementary School of Leadership, Environmental and Health Sciences beginning with the 2016-17 school year, Cindy Magnuson served as the Director of Pre-Kindergarten Services in the School District of Superior. Magnuson's experience as both a principal and a classroom teacher give her the perspective necessary to understand the multifaceted obstacles and rewards of effectively running a school. As the coordinator of Superior Community Preschool, Magnuson oversaw preschools in district, child care, and Head Start settings, which gave her experience overseeing programming for young learners with a variety of needs.

Donald Backner, Assistant Administrator

Donald Backner received his Culturally Responsive Teaching Certificate from St. Mary's University and currently serves as the Assistant Administrator at Oak Ridge Elementary School of Leadership, Environmental and Health Sciences. Backner facilitates the school-wide behavior system and has experience pursuing equity and decreasing the disproportionality across referral data for Black boys.

Pam Haldeman, Principal

Pam Haldeman is currently the principal of Echo Park Elementary School of Leadership, Engineering and Technology. Haldeman previously served for fifteen years as principal of District 196's Parkview Elementary School in Rosemount, MN. Currently, Haldeman's role as principal of Echo Park involves providing leadership for implementation of the District 196 Literacy Collaborative as well as creating structures and systems to support collaboration and a Professional Learning Community model of learning for staff. Haldeman's many years of principal experience as well as her dedication to equity, cultural competency and culturally responsive teaching make her an asset to any learning community.

Kim Mueske, Assistant Administrator

The entirety of Kim Mueske's professional teaching experience has taken place at magnet schools. Currently working as an assistant administrator at Echo Park Elementary School of Leadership, Engineering and Technology, Mueske co-facilitates professional development focused on the magnet theme of leadership, engineering and technology. She also has two years of experience working as a district math coach and facilitating Professional Learning Communities focused on student data and data-driven decision making.

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

Highly Qualified Teachers

Heidi Clendening, Teacher and Math Coach

Heidi Clendening currently works as a Math Recovery Teacher as well as a Title 1 Interventionist at Oak Ridge Elementary Magnet School. In 2016-17, Clendening will assume the responsibilities of a district K-5 Math Coach, teaching math at Oak Ridge for 40% of her time. The other 60% of her time, she will partner with four other elementary schools to advance the math vision of *"Know the Math; Know your Students; Know How to Respond."* She is trained in both Math Recovery and Leveled Literacy Intervention, giving her a thorough understanding of how to best instruct all learners.

Jill Thomas, Teacher and Math Coach

Jill Thomas currently serves as a Primary Math Coach within District 196. In the fall of 2016, Thomas will transition to a K-5 Math Coach for District 196 where she will spend 40% of her time teaching math at Echo Park Elementary School of Leadership, Engineering, and Technology. The other 60% of her time, she will partner with four other elementary schools to advance the math vision, implement the math workshop, and further STEM habits of mind. Thomas plans and provides professional development at the K-5 level and coaches teachers daily in effective math recovery practices. Thomas has 11 years of magnet teaching experience, making her a valuable resource.

Leighera Leffin, Teacher and MTSS Coach

Leighera Leffin is trained as a Reading Recovery Teacher and has an extensive literary background. Leffin has received Literacy Collaborative MTSS coach training (350 hours) and

has been coaching educators at Echo Park Elementary for three years. Her dedication to *Reading Recovery*® and literacy intervention gives her valuable insight into how to best serve struggling learners. Leffin's understanding of the literacy processing, constructivist and reader's response theories will be important as the team integrates leadership, engineering and technology across the school day.

Monica Foss, Magnet Teacher on Special Assignment

Monica Foss currently serves on the Academic Faculty for the National Center for STEM Education while also working as a Magnet School Teacher on Special Assignment at Echo Park Elementary. In Foss's position at Echo Park, she works to guide the school's change from a neighborhood school to a magnet school. To make this transition, Foss has helped design and implement the Science, Technology, Engineering and Math (STEM) program. In addition, Foss has experience writing elementary engineering curriculum and has served as the overseer of STEM professional development needs for school staff. Foss's experience with STEM program development and instruction will prove valuable during the start-up stage of the new magnet and throughout implementation.

Karla Bisco, Magnet Teacher on Special Assignment

Currently serving as the Magnet School Teacher on Special Assignment at Oak Ridge Elementary School of Leadership, Environmental and Health Sciences, Karla Bisco brings an expertise in Responsive Classroom serving as a Responsive Classroom Consultant, thus understanding a research based approach focusing on the link between academic achievement and socio-emotional needs. Bisco's experience at Armatage Community School in Minneapolis, as well as Minneapolis and St. Paul charter schools gives Bisco a unique perspective on the opportunities and challenges choice schools present.

Beth Anderson, Teacher and Tier 3 Lead

Beth Anderson currently serves as a Tier 3 intervention Lead Teacher and Resource Teacher at Oak Ridge Elementary Magnet School. In this position, Anderson supports the implementation of multi-tiered systems of support throughout the school. Anderson is versed in Tier 3 interventions and determines strategies for delivering professional development. Anderson's experience in this position has allowed her to both coach and model Tier 3 interventions for classroom teachers, clerks, basic skills teachers, and interventionists.

Jill Jensen, Teacher and K-5 Science Specialist

Jill Jensen brings twenty years of science teaching experience with skills in developing and implementing elementary engineering curriculum. Jensen has presented at multiple STEM educator conferences and received the 2016 Minnesota Science Teachers Association Elementary Science Teacher of the Year Award. Jensen's passion and experience in the field of STEM provide a valuable foundation for any STEM school. Currently supporting teachers in integrating STEM into the school day at Glacier Hills Elementary School of Art and Technology, Jenson collaborates with the district magnet team to promote STEM instruction and habits of mind in all magnet schools. The team's collaboration informs programming open to all students and community members across the district. Her partnership and collaboration will assist both new magnet schools in the development of their programs.

Ryan Erickson, Teacher and Makerspace Coordinator

Ryan Erickson currently serves as the Makerspace Coordinator for Cedar Park STEM Magnet Elementary in ISD 196. In this position, Erickson produces activities, lessons, and units for K-6 STEM curriculum which integrate the use of 3D printers into lessons. In the 2013-14

school year, Erickson received the EngrTEAMs Fellowship from the University of Minnesota and developed a UBD unit focused on STEM concepts for 4th grade students. His experience and passion for STEM will prove valuable when implementing a STEM magnet curriculum. Erickson also collaborates on the district magnet team to share his results-oriented ideas to inform programming in all magnet schools as well as across the district.

STEM Coach (TBD)

A STEM instructional coach; one per magnet school, will provide professional development and support for elementary teachers. The student-centered coaching model will focus on problem-solving, supporting, guiding, modeling and shifting the work of teachers (individual teachers and teams) in regards to providing responsive instruction while fully utilizing district math, science and engineering resources, assessment and intervention. The instructional coach will collaborate with other elementary coaches, Teaching and Learning Department staff, and as a member of the school's instructional leadership team to align professional development efforts.

MTSS Lead Coach (TBD)

The goal of the position is to assure high-level literacy achievement for every child throughout the school. This will best be accomplished by a well-defined problem-solving process grounded in data analysis and professional learning communities. This person will coach K-2 colleagues in infusing the magnet theme into literacy best practices. He/she will serve as a liaison for MTSS between the district literacy/magnet efforts and the school's implementation, and this person will be actively involved in facilitating school-based professional learning community team meetings. The MTSS coach will collaborate with other elementary coaches,

Teaching and Learning Department staff, and as a member of the school's instructional leadership team to align professional development efforts.

Community Partner Liaison (TBD)

The Community Partner Liaison serves as the point of contact who orchestrates the community support for the magnet school in partnership with the Magnet TOSA. The Community Partner Liaison serves to ensure alignment with district curriculum, enhancement of the magnet theme, and serving to bring the community into the every-day operation of the school. The goal of the position is to launch high-level, aligned, and effective community involvement throughout the school and build capacity for the partnerships to continue beyond the grant and the existence of this position.

Instructional Leadership Team (TBD)

The primary role of the Instructional Leadership Team is to be a communication hub. Each licensed teacher on the instructional team will be paid a stipend for leadership duties that extend beyond the regular teacher contract. It is to ensure all voices are a part of the decision making at both the building and district level. The entire focus of the team is to ensure that the school system is meeting the needs of all students, through the creation of an aligned system that ensures equity both vertically and horizontally. Each individual team member represents a stakeholder's group. The Instructional Leadership Team members' primary responsibility is to carry the voice of the stakeholders they represent into the meeting and to carry the group discussion back and forth. This team is meant to ensure every voice is heard and is a part of the decision making. Examples of duties included for the team are: scheduling professional development, including the needs of new staff members; helping to arrange for uninterrupted blocks of time for Language and Word Study, Reading Workshop, Writing Workshop and Math Workshop; and Creating and maintaining a bookroom and math resource library.

Quality of Project Evaluation

Introduction

Using an outside evaluator can reduce bias and better ensure the integrity of data and reports; therefore, an outside evaluation company was identified and collaborated with District 196 in the preparation of this application. The program evaluation will be conducted by DKH Consulting Services, Inc., whose president Dr. Deidra Honeywell is the lead evaluator on all projects and has 1) extensive experience evaluating, designing, and implementing state and federally funded projects, 2) over 45 years of progressive educational experience, and 3) is working on, has worked on, or has led 24 MSAP project evaluations (13 school districts in eight states) – 12 of which are/were DKH contracts. Dr. Honeywell works closely with DKH Associate, Dr. Connie Walker, who has a Ph.D. in measurement and evaluation. Together they collaborate on the development and implementation of DKH evaluation plans.

This evaluation plan was developed in conjunction with District personnel, includes objectives and performance measures, and each performance measure includes annual quantitative benchmarks that are supported by both quantitative and qualitative data. The use of an outside evaluator assists a District to ensure objectivity in its evaluation process. Although some data is collected directly by the District and other data directly by the evaluators, all of it is analyzed off site in DKH offices by trained evaluators; a process that further contributes to objectivity. Validity is increased by using multiple data sources (such as questionnaires, interviews, focus groups, walkthroughs, and classroom observations) to assess the same objective. Using multiple sources also provides important cross-checks on the evaluation findings.

Evaluation plans designed by DKH use a modified CIPP (Context, Input, Process, & Product) Model, which is recommended for educational projects and based on the work of

Daniel L. Stufflebeam and Harold and Beulah McKee, Western Michigan University (revised 2012). The CIPP Model is a comprehensive framework for guiding formative and summative evaluations for projects and programs. This model can be used effectively by a variety of evaluators including contracted or mandated external evaluators. It has been used throughout the nation as well as around the world for large and small, long-term and short-term evaluations. Successful applications of the model have included various disciplines and service areas including education.

The focus of the CIPP Model is on improvement. As noted by Dr. Stufflebeam, "evaluation's most important purpose is not to prove, but to improve." This philosophy is in alignment with DKH's philosophy, which defines evaluation as a functional activity that can be used to assist, stimulate and support efforts to strengthen and improve programs. The CIPP Model can also be used to identify programs or services that cannot be improved and should, therefore, be terminated. Eliminating unworthy activities also supports improvement efforts by helping organizations free-up resources and time for more worthwhile projects.

(I)The extent to which the methods of evaluation provide for examining the effectiveness of project implementation strategies.

MSAP evaluation plans developed by DKH are comprehensive, include formative and summative approaches, and use a variety of data collection and data analysis strategies, which produce both quantitative and qualitative data. In order to ensure that a magnet program model is significantly impacting student achievement, it is imperative that the study confirms that the model is implemented with fidelity. For this reason, DKH places a strong emphasis on formative evaluation and fidelity of implementation.

Fidelity of Implementation

This component is monitored on three dimensions – method, frequency and support. Annually, a two-person team makes three site visits to each school site and/or participates in project training. This team includes Dr. Honeywell and a DKH associate or field consultant with expertise in the themes included in the project; one example of such a person is Elaine Ranieri, DKH associate. Ranieri has worked with DKH since 2008 and has expertise in mathematics and other STEM components. In preparation for the visit, the site-based leadership team completes a template aligned with the objectives and performance measures of the project (this template is developed by DKH). At site visits, evaluators, the project director and site-based staff discuss the completed template and current implementation progress. Activities conducted during site visits include, but are not limited to: attending selected training sessions; collecting a variety of data on professional development (attendance records, topics covered and alignment with grant objectives, follow-up support, frequency of use of new strategies) conducting school walkthroughs; visiting classrooms; holding focus groups with teachers, students, administrators or parents; interviewing stakeholders; monitoring development of theme-related MSAP curriculum; and conducting classroom observations to document the implementation of new instructional strategies and the use of magnet curriculum units. For all these data collection activities, protocols and/or rubrics are used.

At the end of the site visit, the evaluators informally discuss findings with those administrators and/or supervisors directly involved with the magnet program. Within two weeks formative evaluation reports are generated based on data collected and observations made during site visits. These reports include commendations on areas of strength as well as recommendations, and are summarized by school. When the MSAP project director receives the reports, they are each shared with the individual school's instructional leadership team. Project

directors meet with school staff and discuss how they will respond to the recommendations. For the next site visit, the school staff includes these responses on its report and during the subsequent visit, the evaluators review the school responses and monitor their application in the implementation process. Depending on the complexity of recommendations and based on leading indicators, project implementation strategies may need to be reviewed and adjusted.

(II) 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.

This mixed method evaluation plan is written in accordance with the notice inviting applications for the Magnet School Assistance Program (MSAP) for fiscal year 2016 (CFDA Number: 84.165A). As described in the notice, the MSAP has six purposes. These purposes have been grouped, by USDE, into three major categories; Desegregation and Choice, Building Capacity, and Academic Achievement. See figure 15. Measurement Frameworks on the next two pages.

This plan 1) is based on the project's desired outcomes and performance measures and 2) includes two evaluation components; formative and summative. Specifically, the plan will determine how effective each school and its magnet program is at meeting its primary goals – reducing minority group isolation, building capacity and increasing student achievement. The outside evaluator and District personnel have identified 5 project objectives, each of which is directly aligned with one of the three major purposes of the Magnet Schools Assistance Program (reducing minority group isolation, building capacity and improving student achievement). Each objective has two or more project performance measures and each has annual benchmarks. Annually, actual data will be compared to the appropriate benchmarks; the outcomes of

Measurement Frameworks					
A. Outcome	**B. Indicators**	**C. Measure of Change**	**D. Data Collection Methods**	**E. Data Sources**	**F. Frequency of Data Collection**
Desegregation and Choice Outcomes					
Objective 1: To eliminate, reduce or prevent minority group isolation in the targeted schools without negatively impacting feeder schools.					
Minority group isolation (MGI) is reduced.	Increased enrollment of target subgroups	Decrease in percentage of identified group in total enrollment	OCR Enrollment tables for target schools & District	District data office	Annually - with multiple checks on demographics of applicant pool throughout the application period.
Increased number of applications	Number of applications	Number of applications increase annually	District reports on number of applications	District MSAP magnet office	Annually - with multiple checks on demographics of applicant pool throughout the application period.
Well-developed plan for ensuring diversity in classes & extended day activities	Plan in place, annual monitoring required	Data indicate classes and activities reflect the diversity of the school	Review plan and demographics of classes and activities	Written plan, class lists, and lists of participants in extracurricular activities.	Annual review of plan. Review of class and extracurricular lists three times/year.
New magnet schools do not negatively impact feeder schools	New students come from a variety of schools and placements do not increase MGI at feeder schools	Changes in enrollment by subgroups at feeder schools is < 2 percentage points	OCR Enrollment tables for feeder schools and placement records for each magnet school	District data office	Annually, plus close monitoring of applicant pool and student placement
Building Capacity Outcomes					
Objective 2: To design and develop innovative educational methods and practices that promote diversity, increase choice and ensure students gain 21st century skills. Objective 3: To provide professional development for magnet school teachers related to implementing high-quality educational programs, increasing achievement for all students, improving instructional practices, and ensuring program sustainability. Objective 4: To ensure parents and community members are actively involved in project planning, implementation, and decision-making					
More innovative, challenging, engaging and integrated instruction.	Teachers and administrators are well trained and are utilizing best instructional practices.	Change in percentages reporting that instruction has improved	Surveys of stakeholders (SurveyMonkey), observation protocols, focus groups, formative evaluation reports, and professional development records.	Teachers, students, parents, magnet coordinators and project leadership.	Three site visits and annual collection of data

Building Capacity Outcomes- Continued					
A. Outcome	**B. Indicators**	**C. Measure of Change**	**D. Data Collection Methods**	**E. Data Sources**	**F. Frequency of Data Collection**
Fully restructured & implemented magnet curriculum	Frequency of teachers using integrated, theme related curriculum lessons	Change in the number and quality of integrated magnet theme-related curriculum units developed for all grade levels and stored in an electronic format that allows editing	Review of curriculum documents, review of online storage, surveys of stakeholders (Survey-Monkey), observation protocols, focus groups, formative evaluation reports, and curriculum development records.	Online data storage, teachers, students, parents, magnet coordinators & project leadership.	Three site visits and annual collection of data
Parents & community partners are involved in implementation & decision-making	Parents & community members on campus, in classrooms, participating in magnet leadership team	Change in percentages of parents, school staff, & partners reporting involvement in implementation & decision making	Surveys of stakeholders (SurveyMonkey), focus groups, formative evaluation reports, and parent/community involvement records.	Teachers, parents, and magnet coordinators.	Three site visits and annual collection of data
Academic Achievement Outcome					
Objective 5: To increase percentages of all magnet students, including those from major racial and ethnic subgroups, who meet state proficiency targets in reading/language arts and mathematics.					
Increased percentages of students in major ethnic and racial subgroups scoring at the proficient or higher levels in reading/ language arts.	Proficiency rates increase for subgroups	Proficiency rates increase by at least six percentage points	Official state proficiency data will be analyzed by subgroup	State Dept. of Ed Website and District data office	Once a year. benchmark testing can be reviewed to determine trend data
Increased percentages of students in major ethnic and racial subgroups scoring at the proficient or higher levels in mathematics	Proficiency rates increase for subgroups	Proficiency rates increase by at least six percentage points	Official state proficiency data will be analyzed by subgroup	State Dept. of Ed Website and District data office	Once a year. benchmark testing can be reviewed to determine trend data

Figure 15. Measurement Frameworks

these comparisons will determine the extent to which the magnet schools meet their objectives. In Annual and Final Performance Reports, data for the GPRA Program Performance Measures will be reported in appropriate MSAP charts and tables and Project Performance Measure will be addressed in the ED 524B template provided by the USDE. Reporting for each Project Performance Measure will include four steps - 1) Document and Monitor Activities, 2) Determine Targets for the Current Performance Period, 3) Assess Progress, and 4) Explain Progress.

As described in the Scope of Work and DKH Company Profile (Appendix Q), DKH produces a series of reports over the project period: formative, summative (APR and Ad Hoc) and final. DKH believes that formative evaluation is very important to the success of a project. It measures the degree of implementation fidelity, frequency with which students are exposed to new theme-related activities and magnet curriculum units as well as the use by teachers of the new instructional strategies (best practices). Without ensuring that these components are being implemented with fidelity and frequency, the project's impact on summative measures (such as student achievement) cannot be correlated with project supported reform efforts.

Summative evaluations provide information on the extent to which the magnet schools attain their project objectives and performance measures. These results are summarized in each Annual Performance Report (APR) and/or Ad Hoc Report and supported by relevant data. In addition, GPRA data are submitted on the appropriate data collection forms. Summative evaluation reports are produced on an annual basis and progress on performance measures is reported using the ED 524B format. [Note: performance measures were developed for each objective and each defines annual quantitative targets.] Annually, the reports will address each magnet school individually and results will be presented to school administrators and district staff at the conclusion of the school year.

In addition, DKH evaluators keep a table that summarizes annual performance on each performance measure by school and indicates whether the target was met or not attained. These overall summaries are updated annually and used to review progress with the project director and to help identify areas that need improvement. Based on this review of the data, summative reports include recommendations for improvements and, when appropriate, implementation plans are adjusted.

A final report is written at the conclusion of the project. The final report examines long-term outcomes of the project. While summative reports address issues on an annual basis, the final report looks at program effects over the project period (three years). This report includes data on each Program Performance Measure and each Project Performance Measure. These data are reported either in the school GPRA Table or addressed using the ED 524B format, provided by the USDE. In addition, the report includes MSAP tables and Section C – additional information. The annually updated data summaries provide an overview of the progress of each school on its performance measures and are very useful in preparing the final report. The purpose of the final report is to share the results of this project with other stakeholders and audiences who may use the information to make major program decisions. Program modifications are not made using the final report since the report is not completed until the particular evaluation has concluded. However, information in the report may influence future evaluations and interventions and decisions on the effectiveness of the magnet programs. Findings will be shared with school and district personnel and an executive summary will be distributed to parents and the community.

Methodology

A mixed method approach will be used to conduct this evaluation. This approach offers the opportunity to address the evaluation information using a combination of quantitative and qualitative methods from multiple data sources. It also assures dependable feedback because these methods complement each other and provide important cross-checks on the evaluation findings through triangulation. As a result, the evaluation will be able to determine the value of the target MSAP-funded magnet programs in a comprehensive way and provide appropriate direction for their improvement.

Fidelity of Implementation

This component is monitored on three dimensions – method, frequency and support. For details on this component, see the response in item (I).

Sampling

Participants for the focus groups and implementation team interviews will be selected using purposeful sampling with maximum variation. This type of sampling will allow the evaluators to intentionally select individuals from different races/ethnicities who can provide the necessary information from different perspectives. This process will promote diversity through the inclusion of participants from minority groups represented in each school's population. Parent and student focus groups will include approximately seven people and be representative of a school's demographics, socio-economic status, and zoned/out-of-zone (enrolled through application) students.

Participants for the questionnaires will be selected according to the following guidelines. All instructional staff in the target schools and grades are asked to participate in the questionnaires. If time and resources permit, all parents and students (in grades 3 or above) will

be invited to participate in the questionnaires. In case of resource constraints (e.g., time and access to computers), a stratified sample would be indicated. This sampling method will ensure representation from different strata, such as racial groups, grade levels and socioeconomic levels, from the participating schools.

Beginning in Year 2, classroom observations at each MSAP funded school will be scheduled. As part of its implementation plan, each school will identify a list of expected 'best practices' based on its magnet theme and observers will monitor instruction for those strategies. In addition, observers will be monitoring teacher and student use of technology, for example one measure might be teacher/student use of technology at level 2 or higher as defined in the SAMR Model. Observers will use a rubric to record teacher and student behaviors relative to magnet instructional expectations.

When focus groups are not scheduled during a visit, the evaluators will conduct two to three (depends on length of visit) classroom observations per school per site visit. When conducting parent or student focus groups, the evaluators will only observe in one or two classrooms. To be observed, a teacher must be implementing a magnet lesson that is theme-related and part of a curricular unit developed for the school as part of its MSAP funding. Observations are scheduled so that the evaluators arrive at the beginning of a lesson and they last between 20 and 30 minutes. Classrooms will be randomly selected from a list of available possibilities. Over the span of the grant, evaluators will observe in as many magnet classrooms as possible.

Data Collection and Analysis Methods

Several methods of data collection are being proposed to address the information requirements of a MSAP grant. Those include: (a) questionnaires, (b) focus groups, (c)

interviews, (d) classrooms observations, (e) review of school records (e.g., enrollment, applications) and (f) review of district data (e.g., tests scores). Data will be collected directly from participants and from existing records at the participating schools and/or the school district. Data collection instruments will be aligned with project objectives and performance measures. These data collection instruments will be designed by the external evaluator and will be revised and edited in collaboration with MSAP project management. Standardized sets of questions and observation rubrics will be developed by Dr. Honeywell in collaboration with DKH Associate Dr. Walker and project management. DKH has an account with SurveyMonkey, which will be used to deliver online questionnaires to participants. Other data will be gathered by the evaluation team.

The following data collection instruments will be developed for this evaluation plan: student, parent, and staff questionnaires, protocols for interviews with school/district personnel; protocols for focus groups; a classroom observation rubric; templates for implementation and staff development plans; staff development spreadsheets; and site visitation templates (aligned with project objectives). These instruments will be designed by the evaluator with input and feedback from school and district personnel. The student, parent and staff questionnaires will include items that relate to specific objectives and performance measures. After the first year of the project, questionnaire items will be reviewed to determine whether items need to be modified. In order to compare results from year to year, only minor modifications that do not change the meaning of the item but rather clarify it, would be appropriate. Using standard sets of questions, as part of interviews and focus groups protocols, allow evaluation team members to collect data from different sources and keep consistency across these measures. These questions also will be reviewed annually to determine usefulness and applicability. Rubrics will

be created for use in assessing the classroom environment and magnet curriculum/instruction. Finally, a site visitation template will be created to serve as a data collection tool for the assessment team when conducting site visits. Templates will also serve as outlines for the formative evaluation reports. Instruments will contain multiple choice items, including Likert-type scale response options, among others, and open-response items. The evaluator will train assessment team members on the proper use of all instruments. The purpose of this training is to reduce variability in interpretation in order to limit errors in data collection.

Quantitative Data

A wide range of quantitative data will be collected for the MSAP evaluation. These include, but are not limited to, the following data elements that will be obtained, for the most part, from the participating schools and school district. The data will include (a) demographic information about the schools, students, and staff, (b) enrollment by grade and race for the district, MSAP sites, and feeder schools, (c) impact of magnet enrollees on feeder schools, and (d) students by subgroups who score at the proficient or above level on Minnesota assessments in reading/language arts and mathematics. Also, data will be gathered through a) questionnaires to obtain information from staff, teachers, parents, and students and b) standardized rubrics for classroom observations will provide additional data. The quantitative analysis will be addressed both, descriptively and inferentially. Descriptive statistics (e.g., means, median, mode, standard deviations, and frequency distributions/percentages, percentage change) will be computed for the total group of participants as well as disaggregated by relevant characteristics/schools, as needed. Inferential statistics (e.g., t-test), if needed, will be estimated as well. The data will be analyzed using SPSS. Outcomes from these analyzes will be included in the MSAP Annual Performance and Ad Hoc Reports and used for program improvements.

Qualitative Data

Data will be gathered through focus groups, interviews, open-ended items on questionnaires, and classroom observations. Results will be transcribed, organized, and checked for accuracy and may be entered into a qualitative software package such as, HyperResearch. The analytic procedures will comprise the exploration and codification of this data to generate themes representing the findings and the interpretation of these findings as the final step. The qualitative input collected from members of a school's magnet implementation team will be used to validate and expand the quantitative results.

Quantitative and qualitative evaluation results will be combined to cross-check inferences on the effectiveness of a MSAP-funded model and its magnet theme approaches. Information collected for DKH evaluations provides program accountability data, which may suggest the success of the magnet program model at each participating site. These outcomes may suggest the advisability of replicating these programs in other settings. Site visits allow for the identification of leading indicators and serve as the primary monitoring mechanism. Annual reports also provide monitoring opportunities and additional data that are used for continuous project improvement.

The following text provides an abbreviated overview of the five project objectives and appropriate data collection instruments. For summative evaluation reports, these data will be compared to performance measure targets to determine degree of attainment. In addition to the quantitative data included in the ED 524B chart, other data that confirms and supports the reported data is included in the explanation. Decisions on adjusting the implementation plan are based on the totality of collected data. A full text version of the objectives and performance measures can be found in Appendix G.

Objective 1: Reducing minority group isolation (MGI) in the target schools. Assessment data will come from school, LEA, and feeder school enrollment charts (MSAP tables), which are disaggregated by race and ethnicity. In addition, applicant pool and student placement data will be used to determine the effectiveness of the project's marketing and recruitment plans. Actual data will be compared to target percentages to determine whether the project is on track to meet its final targets. Analysis of these data will be used to determine project improvements.

Objective 2: Design and develop innovative educational methods and practices that promote diversity, increase choice, and ensure students gain 21st Century Skills. Assessment data will be collected on staff use of innovative methods (project-identified best practices) through 1) staff, student and parent questionnaires/interviews, 2) class or daily schedules of teachers and magnet specialists, 3) feedback from focus groups (staff, parent, student), 4) classroom observations using an evaluator-developed rubric and 5) three-year implementation plans. These data will be collected, summarized and reported and, based on the results, project adjustments will be made.

Objective 3: Provide professional development, increasing student achievement, improving instructional practices, and assuring sustainability. Assessment data will be collected on staff training in best practices through a magnet staff development spreadsheet developed by the evaluators and maintained by the magnet coordinators. Data will be submitted to the evaluators at each of the three annual site visits and the spreadsheet will include information or data on the type and category of training, number of hours offered, and attendance for each teacher. The number of hours attended, by category as well as for all categories, for each teacher will be summed over the school year and compared against the target and the percentage meeting the target will be calculated. In addition, data will be collected through staff questionnaires,

focus groups, walkthroughs, classroom observations (including measures of technology integration using the District 196 Learning and Technology Framework (Appendix E), three-year staff development and implementation plans and evaluator review of magnet-developed theme-based units and minutes/schedules of Professional Learning Community (PLC) meetings. These data will be used to ensure that teachers are participating in and applying the appropriate magnet training and applying the project-identified strategies and pedagogies in classroom instruction.

Objective 4: Ensure parents and community members are actively involved in project planning, implementation and decision-making. Assessment data will be collected through staff and parent questionnaires, records regarding magnet theme related parent events, attendance at parent activities and events, number of parent and community representatives on magnet leadership teams, and focus groups/interviews. These data will be used to determine parent/community participation and decision-making as well as their satisfaction with the magnet programs.

Objective 5: Increase percentages of students, including those from major racial and ethnic subgroups, who meet Minnesota proficiency targets in reading/language arts and mathematics. Assessment data will be collected from Minnesota assessments which are given annually. Data is analyzed and reported by the Minnesota Department of Education, sent to the District, and posted online. These data will be reported by school and subgroup and achievement by subgroups will be compared to school baseline data and District and State averages. These data will be compared to project benchmarks, statistical methods will be used to determine if changes are significant and the results will be reported in the Annual Performance Report and/or the Ad Hoc Report.

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

As previously described, the evaluators will develop a school report template, aligned with project objectives and performance measures. The school-based Magnet TOSA, with input from the principal and other magnet team members, will complete the template (3 times a year) and submit the document to the project director and Project STEMInspired manager. After reviewing the reports, the project director sends them to the evaluation team at least one week prior to the site visit. The evaluators review the reports, noting any questions they have or any additional information needed. At each site visit, the evaluators meet with the magnet site team for at least 90 minutes. During this time, questions are answered, additional details gathered and suggestions about possible changes or improvements are discussed. Over the course of the grant cycle, school coordinators become more efficient at completing the template, which allows more time to visit classrooms or conduct focus groups. During each school year, one template is used by each school and additional information added for each visit. This ongoing document also includes all of the evaluators' feedback for the year. By the end of the year, the documents are frequently more than 30 pages. At the beginning of each school year, a new template without any previous entries is started. These documents clearly show implementation progress at each school over the funding cycle.

Within two weeks following each site visit, a formative evaluation report for each school is sent to the project director. These reports contain commendations and recommendations for the school and program. Beginning in Year 2, the reports also contain feedback on each teacher observation with input related to specific performance measures, such as instructional and/or student use of technology or teacher use of MSAP identified 'best practices." In addition, the evaluators include statements under two categories: 1) "The teacher is to be commended for" and

2) “The teacher might consider.” Once the reports are sent back to the schools, MSAP staff share these comments with teachers. When a focus group is conducted during a site visit, that summary is also included with the school report. Feedback from focus groups is also shared with the school based teams and evaluators may use some of this information as the basis of a commendation or recommendation.

Quantifiable Results

As mentioned earlier, the project has five objectives and 25 project performance measures. Each performance measure has a quantifiable target and annual benchmarks have been set for each year of the project. As appropriate for the ED 524B used in both the Annual Performance and Ad Hoc Reports, annual targets are either numbers or ratios and corresponding percentages. Quantitative data will be reported in the ED 524B tables and supporting qualitative data will be included in the explanation of progress. Outcomes will include calculations and statistical analyzes for the following data elements: staff, parent, student questionnaires; focus group/interview feedback; frequencies and percentages of parent involvement, community involvement, and theme-related instruction; participation of magnet staff in professional development, classroom observation rubric measures; district and magnet school enrollment/percentages by grade and race; feeder school enrollment/percentages by race; impact of magnet enrollees on feeder schools; percentages of students by subgroup who are proficient or above on Minnesota assessments in reading/Language Arts and mathematics.

A continuous improvement process is used to draw inferences on the success or need for improvement of MSAP strategies and structures. Data on long-term indicators, such as increases in student achievement are more difficult to interpret – particularly in the early years of program implementation. These types of outcomes require a “build-up” of improvements and reforms

over several years of changes in teacher behavior before the full effects can be seen. At the end of each school year, the evaluation team and evaluators will use a process such as the continuous improvement process to look at leading indicators, long-term indicators, and program implementation results to draw conclusions based on the totality of the information collected. While single data points are important, it is essential to look at the big picture – all student outcomes and implementation results in total – to assess program progress.

Deliverables

Within two weeks of each site visit, project management will receive a written report. These written, formative evaluation reports document the implementation of the project and compare actual progress to expected progress as described in the original grant application. Areas of strength and areas needing improvement, as well as recommendations are summarized. At subsequent visits, the project director and school representatives provide updates on recommendations included in the previous site visit report. Annual Performance (May) and Ad Hoc (October) reports are sent to the project manager at least two weeks prior to the U.S, Department of Education due dates. After submission of annual and ad hoc reports, project management and the evaluation team will review results, compare them to expected benchmarks, and identify changes that might be needed to improve future results. When all data is available, the Final Performance Report is submitted to the district – always well within the deadline of three months after the end of the project. As needed, the evaluators will make oral presentations of findings to other district administrators and supervisors interested in project outcomes.

Credentials of Evaluation Planners

In addition to the qualifications previously stated for Dr. Honeywell, she has a broad foundation in mathematics and statistics, which provides her with a thorough understanding of

quantitative and qualitative research and evaluation, as well as the use of various types of data and statistical analyses and processes. Her undergraduate education program and recertification courses included 44 credit hours in mathematics with such classes as Calculus & Analytical Geometry (3 courses), Linear Algebra (2 courses), Modern Algebra (2 courses) and Statistics. Her graduate work included courses titled Foundations of Measurement and Statistical Analysis in Education I, II, & IV. In addition, Dr. Honeywell's doctoral dissertation required a research design and data analysis. In 1999, Dr. Honeywell was credentialed to teach two graduate level research courses for National-Louis University – ESR506: Graduate Research: Interpretive/ Critical and ESR507: Graduate Research: Empirical/Qualitative. Dr. Honeywell has the following degrees from the University of South Florida (USF): BA in math education, MA in gifted education, and a Ph.D. in curriculum & instruction.

Dr. Walker completed her doctoral program at USF in December of 2014, where she specialized in measurement and evaluation. Dr. Walker has significant evaluation experience which includes working on many large federal projects, one of which was for the National Science Foundation. Her current position at USF, as Senior Social and Behavioral Researcher, involves the evaluation of multiple projects housed in the USF College of Behavioral Sciences as well as data analysis support. As part of her work experience she has developed a number of data collection instruments including questionnaires, focus group protocols, interview protocols, and observation protocols. She has worked with both SurveyMonkey and Qualtrics platforms, conducted data analysis using SPSS, SAS, and HyperReserach, and, based on the results of analysis, interpreted data. Dr. Walker has developed multiple evaluation plans, implemented program evaluations, prepared evaluation reports (progress, interim, and final), and provided

guidance to stakeholders on using evaluation results for program improvement. See Appendix R for a timeline of evaluation services.