

NARRATIVE: *STEM Charging Stations for Young Children & Families*

I. Statement of Need

Explora is an innovative experiential learning center in Albuquerque, NM, providing inquiry-based programs and exhibits that illuminate basic concepts in science, technology, engineering, and math (STEM) for people of all ages. In this IMLS Activating Communities proposal, Explora describes a new two-year project, *STEM Charging Stations for Young Children & Families*, that will utilize a collective impact approach to address a critical community issue: the achievement gap between our state’s low-income children of color and their more economically advantaged peers. Explora will partner with the New Mexico State Library (NMSL), Central New Mexico Community College (CNM), the UNM Cariño Toy Lending Library, NM PBS, and the Bernalillo County Early Childhood Accountability Partnership (ECAP) to utilize our combined resources and expertise, existing relationships and partnerships, and new research and recommendations to address this achievement gap and affect positive community change. Informed by formal community listening sessions and the recent release of both local reports on our early childhood education system and national reports on the importance of early exposure to STEM, our Project Team has identified a strategic framework around which we’ll organize our change efforts. *STEM Charging Stations for Young Children & Families* will focus on decreasing the achievement gap by increasing early parent-child engagement in community-embedded STEM learning.

This effort addresses well the challenge identified in IMLS’ Activating Communities funding initiative, since it focuses on a community coming together to build upon the unique abilities of libraries, museums, and other educational organizations to achieve positive change. Additionally, the project will demonstrate the viability of using and adapting an existing collective impact approach to catalyze change. This community-based project will bolster Explora’s efforts to move beyond being a community resource and into the role of community catalyst and significant contributor within broader community conversations. It also will develop a model that can be shared with our museum and library colleagues around the country for co-creating, deepening, and sustaining systemic community efforts to engage low-income families with young children. *STEM Charging Stations for Young Children & Families* builds upon previous work among the project partners and complements Explora’s strategic, three-part community engagement initiative—to listen, welcome, and co-create—an initiative that has been formed through community listening sessions that involved many of the project partners and their client families. However, the new project will take the Project Team’s work to the next level, helping us engage systemically to leverage strengths and resources, align our work, and address an adaptive problem, resulting in greater impact on real community change.

Authors of the recent report, *STEM Starts Early*, wrote, “To support the future of our nation, the seeds of STEM must be planted early, along with and in support of the seeds of literacy. Together, these mutually enhancing, interwoven strands of learning will grow well-informed, critical citizens prepared for a digital tomorrow.”¹ The same report describes how parents, teachers, museums, and libraries can become a web of “charging stations,” where children can “power up” and extend their STEM learning. Heeding this advice and drawing on existing strengths, Explora and its partners will address the achievement gap in New Mexico by providing increased opportunities for young children (birth through age four), early childhood care providers, librarians, and parents/caregivers to engage in STEM learning at existing community venues already serving low-income families—turning these sites into metaphorical STEM Charging Stations.

New Mexico is in dire need of programs like *STEM Charging Stations for Young Children & Families*. The most recent KIDS COUNT Data Report² ranks our state 50th in education and 49th in overall child well being. It shows, too,

¹McClure, E. R., & Guernsey, L., et al. (Winter 2017). *STEM Starts Early. The Joan Ganz Cooney Center at Sesame Workshop and New America.*

²KIDS COUNT Data Report. (2016). *Annie E. Casey Foundation.*

that 29% of New Mexico’s children live in poverty; these children are predominantly children of color. NM is a minority-majority state, and 75% of our children are racial and ethnic minorities. Reflecting the stresses faced by their families, children from low-income households are more likely to have difficulties in school, and research has shown that the achievement gap that exists between children in poverty and their more economically advantaged peers is evident as early as the child’s first 18 months³. Making early educational support available is vital to bridging the achievement gap. When parents/caregivers and children work, learn, and discover together, sparks of creativity and understanding emerge, providing children with the support they need to become life-long learners.

Momentum and interest in early childhood education has been building in New Mexico—both at grassroots- and grassroots-levels. In 2010, the Children, Youth, and Families Department (CYFD) partnered with the New Mexico Department of Health to gather and use epidemiological data to compare levels of risk across New Mexico’s communities and identify areas with the highest risk levels as Investment Zones. Albuquerque’s South Valley—a prime service area for most of our project partners—has been identified as an Investment Zone and recognized as a community whose children are most at risk for school failure.⁴ Similarly, the South Valley Early Childhood Group (to which many of the project partners belong) recently released their “Bernalillo County South Valley Early Childhood System of Systems Developmental Alignment Plan,”⁵ and CNM and other partners are completing asset mapping and gap analyses specifically focused on in-home early childhood care providers. Additionally, for years Explora has held a series of formal listening sessions with diverse community groups, and the need to provide early childhood learning experiences for young children remained a consistent aspiration, rising to the surface in almost every one of 17 listening sessions. Thus, Explora identified early childhood STEM education as a key area of focus in its Cradle through Career STEM Learning Strategic Plan. All of this activity demonstrates that early childhood education—and the disparate access to it—is a community improvement opportunity with broad interest and support. This momentum will propel our Project Team forward, support a new focus on early STEM learning, and, with analysis of the quantitative and qualitative data described above, help ensure successful implementation.

The release of two new national reports also catalyzed our Project Team: *Early STEM Matters*, a policy report by the Early Childhood STEM Working Group, and *STEM Starts Early*, a National Science Foundation-funded report from the Joan Ganz Cooney Center at Sesame Workshop and New America. These two reports summarized current literature and practice regarding early STEM learning, discussed ways to support early STEM education, and offered guiding principles and actionable recommendations that have informed our project plan.^{6 7}

Explora will serve as the backbone organization for this collective impact project, which will focus on a set of interrelated activities directly tied to addressing the achievement gap for young children. The project will involve five areas of work, designed to create metaphorical STEM Charging Stations throughout the community. These areas of aligned work include:

1) the convening of an Early Childhood STEM Summit in Albuquerque, bringing together early childhood educators, funders, parents, and other stakeholders to build understanding and support for the role of STEM in early childhood education;

³Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Baltimore, MD: Paul H. Brookes Publishing Company.

⁴South Valley, Albuquerque Early Childhood Data Profile. (2014). *State of New Mexico Children, Youth & Families Department Early Childhood Services Division*.

⁵Bernalillo County South Valley Early Childhood System of Systems (SOS) Developmental Alignment Plan. (2016). *First Choice Community Healthcare in partnership with South Valley Early Childhood Group*.

⁶Providing High-Quality STEM Experiences for All Young Learners: A Policy Report by the Early Childhood STEM Working Group. (January 2017). *Early STEM Matters*.

⁷McClure, E. R., & Guernsey, L., et al. (Winter 2017). *STEM Starts Early*. *The Joan Ganz Cooney Center at Sesame Workshop and New America*.

- 2) co-development of a new 3-credit course at CNM to support the STEM learning of CNM students enrolled in the Early Childhood Associates Degree program and integration of STEM activities for children into practicum experiences, building the capacity of pre-service educators to turn childcare centers into STEM Charging Stations;
- 3) professional development for librarians, enabling them to facilitate “STEM to Read” family engagement activities at libraries statewide, enabling libraries to be STEM Charging Stations, as well;
- 4) parent/caregiver workshops for client families of ECAP partner organizations, focused on early childhood brain development and how to engage with children around STEM content, and the development of at-home STEM activity kits for check-out from the Toy Lending Library, another community-embedded Charging Station; and
- 5) a public awareness campaign that includes Public Service Announcements on NM PBS and the production of a calendar that partners can share with our combined total of 30,000+ client families, describing the ways in which children can “power up” at local STEM Charging Stations.

STEM Charging Stations for Young Children & Families will improve access for low-income families to multi-generational, science-rich learning experiences in community settings. It also will demonstrate how museums and libraries can be significant contributors within broader community conversations around issues like the achievement gap and contribute to positive community change. The project will be undertaken with the involvement of several non-traditional audiences and cross-sector partners: low-income young children and their parents/caregivers, pre-service early childhood educators studying at CNM (many of them low-income parents themselves), urban and rural librarians, grandparents providing in-home childcare, and early childhood education advocacy organizations and service providers. Project participants have expertise and perspectives that aren’t traditionally sought out by museums, and all will be equal partners in the work, meeting monthly to co-develop the initiative, oversee the implementation, reflect on evaluation efforts, facilitate programs, and ensure Explora, as the lead organization, develops a complete understanding of the opportunity and need.

II. Impact

This project addresses the following goals described in IMLS’ strategic plan: “IMLS places the learner at the center and supports engaging experiences in libraries and museums that prepare people to be full participants in their local communities and our global society” and “IMLS promotes museums and libraries as strong community anchors that enhance civic engagement, cultural opportunities, and economic vitality.”⁸ The proposed project will enlist a variety of community-based organizations to engage low-income families of color and increase their opportunities for early STEM learning and discovery; it will advance the museum field’s ability to work systemically to address real community issues, like the achievement gap.

We are interested in being considered for EPA Building Blocks technical assistance.

Explora will work with the New Mexico State Library (NMSL), Central New Mexico Community College (CNM), the UNM Cariño Toy Lending Library, NM PBS, and the Bernalillo County Early Childhood Accountability Partnership (ECAP) to address the need for increased early learning opportunities for low-income young children of color and their adult caregivers, in order to decrease the achievement gap. To do this, the project partners will utilize our combined resources and expertise, existing relationships and partnerships, and new research and practices related to parent-child engagement in early STEM to affect positive community change.

Community voices have been involved in defining the opportunities and needs to be addressed by this project, and the collective vision for impact has been developed over the last year while the partners experimented with small-scale projects together, in order to learn more about the issue and explore ideas about how to address the

⁸Creating a Nation of Learners. (January 2012). *IMLS Strategic Plan 2012-2016*.

achievement gap. Explora, the backbone organization for this project, also serves as the backbone organization for the Central NM STEM-H Education Hub (the STEM-H Hub), designated one of 37 STEM Learning Ecosystems in the country by the STEM Funders Network. The STEM-H Hub also has chosen to address the achievement gap; that group will focus on closing the math achievement gap in elementary school through family math engagement. They recently have been invited to move on to the next stage of an NSF INCLUDES proposal to support that work. Another local collective impact project, Mission: Graduate, led by the United Way of Central New Mexico as the backbone organization, has a similar goal with a focus on post-secondary degree attainment. Together, *STEM Charging Stations for Young Children & Families* and these aligned projects create a cradle-through-career focus on closing the achievement gap in New Mexico, along with STEM learning pathways for low-income students of color.

STEM Charging Stations for Young Children & Families will develop, test, and share resources co-developed with the community—integrating knowledge, experience, and strengths of families who often are not engaged in museum learning—in order to embed STEM Charging Stations into a number of existing venues. The products of this project will include both these new resources and a replicable process that museums and libraries can use to listen, welcome, and co-create with community partners, in order to increase relevancy and impact in the community.

The Project Team’s work plan has been informed by theory and practice in the areas of asset-based community development and collective impact, an approach based on the idea that no single entity can tackle or solve the increasingly complex social problems we face and calling for multiple, cross-sector partners to put aside individual agendas, in order to focus on a common purpose, shared measurements, and alignment of efforts.⁹ John Kania & Mark Kramer identified five elements key to this approach: common agenda, shared measurement of results, mutually reinforcing activities, continuous communication, and a backbone organization. In their article, the authors wrote, “... we believe that there is no other way society will achieve large-scale progress against the urgent and complex problems of our time, unless a collective impact approach becomes the accepted way of doing business.”¹⁰ The Project Team has experience with the benefits and challenges of working within a collective impact framework from our involvement in the Mission: Graduate and ECAP projects, and the lessons learned through that work will inform this new initiative.

The objectives for *STEM Charging Stations for Young Children & Families* include:

- 1) build interest and awareness of the importance of early STEM learning experiences for setting up young children for future success, as explained in the recent reports, *Early STEM Matters* and *STEM Starts Early*;
- 2) build capacity among childcare providers, libraries, and parents to provide STEM learning activities for young children;
- 3) increase access to STEM learning opportunities for low-income children of color and their parents/caregivers;
- 4) demonstrate the power of a collective impact social innovation framework to address a systemic community condition.

The Project Team will accomplish our goal and objectives through a set of interrelated activities directly tied to addressing the achievement gap for young children. Five intended measureable outcomes include:

- 1) the convening of an Early Childhood STEM Summit in Albuquerque, bringing together approximately 125 early childhood educators, funders, parents, and other stakeholders;

⁹The Collective Impact Framework. (n.d.). Retrieved April 2, 2017, from <http://www.collaborationforimpact.com/collective-impact/>

¹⁰Kania, J., & Kramer, M. (Winter 2011). Collective Impact. *Stanford Social Innovation Review*.

- 2) the development of a new 3-credit course, called “Science and Math in the Early Childhood Classroom,” for pre-service educators enrolled in the Early Childhood Associates Degree program at CNM, and incorporation of STEM activities into students’ practicums at local childcare centers. The course will serve approximately 25 CNM students and 750 young children per semester, for two semesters;
- 3) professional development for up to 120 state librarians and the production of accompanying activity kits, enabling them to facilitate “STEM to Read” family engagement activities at libraries statewide;
- 4) “Growing a Scientist” workshops in English and Spanish for approximately 120 parents affiliated with ECAP partner organizations, focused on early childhood brain development and how to engage with children around STEM content; participating parents will receive no-cost memberships to Explora for continued family STEM exploration, and all Albuquerque parents will be able to check out STEM activity kits for home use from the Toy Lending Library; and
- 5) a public awareness campaign that includes Public Service Announcements on NM PBS and its affiliated channel, which features 24-7 children’s content, and the production of a calendar that partners can share with our combined total of 30,000+ client families, describing the ways in which children can “power up” at local STEM Charging Stations (the libraries, childcare centers, Explora, etc.).

University of New Mexico’s (UNM) Center for Education Policy Research (CEPR) will be the external evaluator for this project and will assess development and implementation, outputs, and outcomes. CEPR will collaborate with the Project Team in selecting key measures of progress and impact using integrated qualitative and quantitative methods. CEPR will collect survey and interview data from parents/caregivers, librarians, and childcare providers on their participation and engagement with children’s learning in math and science and the effectiveness of STEM enrichment activities.

Results of *STEM Charging Stations for Young Children & Families* will be shared locally with all project partners and in a report that will be sent to everyone who attended the Early Childhood STEM Summit. Findings that serve as the basis for approaches, processes, tools, and resources for other libraries, museums, and community colleges will be shared with partners across the country. Explora serves as the lead organization for New Mexico’s STEM Learning Ecosystem and is a member of the national STEM Learning Ecosystems Early Childhood STEM Community of Practice. Results of this work will be shared as a webinar with this national community of practice and will be showcased during one of two annual STEM Learning Ecosystem Convenings. Resources and findings from the project will be shared through presentations at meetings and conferences for museum-, education-, and library-focused audiences, facilitated by representatives from the partner organizations. These conferences could include the Association of Children’s Museums conference, the Association of Science-Technology Centers conference, the National Association for the Education of Young Children’s annual conference, and the conference of the American Library Association. Because project leads at Explora are alumni fellows of the Noyce Leadership Institute, the resources and lessons learned also will be shared among that network of over 100 leaders in the museum field, a group capable of creating systemic change in the way museums operate.

III. Project Design

The Project Team has chosen one question as the frame for all of our collaborative work: Can we decrease the achievement gap between low-income young children and their more economically advantaged peers by working systemically to increase access to and participation in community-embedded STEM learning activities for young children and their parents/adult caregivers?

In support of the goal, objectives, and outcomes described above, the Project Team has designed a plan for embedding metaphorical STEM Charging Stations throughout the community, where young children and their parents/caregivers can “power up” their learning. This concept is introduced by the authors of *STEM Starts Early* as

a way community organizations can develop a web of activities and learning pathways that immerse young children and their parents/caregivers in STEM learning and lead to STEM fluency.¹¹

During conceptual design of our project plan, we utilized the guiding principles and recommendations in the recently released report, *Early STEM Matters. STEM Charging Stations for Young Children & Families* utilizes two of the report's four guiding principles, both addressing the role of adults in developing STEM literacy and affecting STEM attitudes and interests. The report authors write that young children, "need adult assistance to foster, guide, and build on their interests to ensure adequate early STEM experiences."¹² Our project focuses on adult-child engagement in STEM and includes adults who interact with young children in many different contexts, like parents and other adult caregivers, childcare providers and early childhood educators, and librarians and museum staff. The report authors also write that we must work to change adults' existing attitudes about STEM "by building adults' and children's self-efficacy around their ability to learn and do STEM, especially in groups that are traditionally under-represented in STEM careers, such as women and minorities." Our project focuses on community-embedded STEM activities and professional development that will build interest and confidence in STEM for librarians, parents, and pre-service early childhood educators—the majority of whom are women of color.

In developing project outcomes, we have utilized four of the six recommendations described in *Early STEM Matters*; specifically, 1) Raise the profile and understanding of early childhood STEM education via messaging; 2) Revamp pre-service STEM-related training and supports for early childhood teachers; 3) Establish initiatives, resources, and supports that promote parents' and families' involvement and engagement in their young children's STEM education; and 4) Make high-quality early STEM resources and implementation guidance available to practitioners.

As described on the attached Schedule of Completion, in Year One (November 2017-October 2018) Explora will convene monthly Project Team meetings for planning, brainstorming, vetting ideas, activity co-development, reflection, review of prototyping and evaluation, and ongoing relationship-building. The first year will begin with the Project Team doing a thorough review and compilation of learning gained through local asset-mapping and gap analyses and of recommendations made in the national reports referenced above. Explora will continue to hold listening sessions with low-income families of color to better understand relevant aspirations and community conditions. The Project Team also will commence planning for an Early Childhood STEM Summit, which will take place in the fall of 2018. Explora and CNM will co-develop the new three-credit course on math and science in early childhood settings, which will be submitted to CNM in February 2018 for approval and inclusion in the official course catalog. The first semester of this course will take place in Fall 2018, and students will incorporate STEM activities into their practicum experiences that semester. Year One also will include Explora and NMSL co-developing STEM to Read professional development workshops and activity kits for librarians statewide, and Explora and ECAP co-developing "Growing a Scientist" workshops for parents, in both English and Spanish. These workshops will be prototyped with librarians and parents, refined, then facilitated again with additional groups. Family STEM activity kits also will be placed in the Toy Lending Library in Year One for check-out by families. Parents participating in "Growing a Scientist" workshops will be given no-cost family memberships to Explora, which will allow them unlimited access to continued family engagement with STEM. CEPR will be providing ongoing evaluation throughout Year One to inform the Project Team's work and allow us to change course, as needed. Near the end of the year, the Project Team will start drafting a Sustainability Plan and will present at one annual conference.

¹¹McClure, E. R., & Guernsey, L., et al. (Winter 2017). STEM Starts Early. *The Joan Ganz Cooney Center at Sesame Workshop and New America*.

¹²Providing High-Quality STEM Experiences for All Young Learners: A Policy Report by the Early Childhood STEM Working Group. (January 2017). *Early STEM Matters*.

In Year Two (November 2018-October 2019) monthly Project Team meetings will continue. We will produce and disseminate a report on the Early Childhood STEM Summit and disseminate the report to summit participants. Explora and CNM will refine the three-credit course on math and science in early childhood settings, based on results of evaluation. The second semester of this course will take place in Fall 2019, with students facilitating STEM activities in their practicum experiences. Explora, NMSL, and ECAP will use evaluation results to refine and adapt the professional development workshops for librarians and parents, and additional workshops will be facilitated with both audiences. Activity Kits also will be updated, and new activities may be added, as needed. Family STEM activity kits will continue to be available in the Toy Lending Library for check-out by families, and we will track their use. Parents participating in “Growing a Scientist” workshops will be given no-cost family memberships to Explora, which will allow them unlimited access to continued family engagement with STEM. CEPR will be providing ongoing evaluation throughout Year Two and will produce an evaluation report. The Project Team will finalize a Sustainability Plan and will present project results at two annual conferences.

The roles and responsibilities of each member of the Project Team are described below:

The New Mexico State Library System (NMSL) is comprised of 96 libraries in 31 counties of the state, including 13 nonprofit libraries and 19 tribal libraries, in addition to those controlled by municipalities. The State Library supports public libraries by providing consulting services, offering training and continuing education opportunities, administering the library certification program, coordinating a state-wide summer reading program, and administering state and federal grants to public libraries. NMSL has a strong relationship with Explora and shared history piloting the “STEM to Read” program, which provides science kits and professional development for librarians to incorporate hands-on STEM activities into their regular read-aloud family programming. During the pilot in 2016, 1,200 people attended “STEM to Read” programs at 26 different libraries, and there is currently a waiting list of libraries wanting to reserve a “STEM to Read” kit from NMSL for use at their sites. NMSL has committed to serving on the Project Team, co-developing new “STEM to Read” kits with Explora in order to scale up and meet the demand of librarians for help incorporating STEM into their usual programming, recruiting librarians for professional development opportunities co-developed with and facilitated by Explora, participating in evaluation efforts, and contributing a list of “STEM to Read” activities across the state to the project’s shared calendar.

Central New Mexico Community College (CNM) is the largest community college in New Mexico, serving over 30,000 students. The mission at CNM is to help students succeed in whatever educational or workforce-training endeavor they seek. CNM is well known for responding to the needs of the local economy through course development and for its ability to efficiently train workers for quick entry into New Mexico’s economy. Almost 95 percent of CNM graduates get jobs related to their field of study. CNM Education Programs has worked with Explora for over four years on projects that support STEM learning in the field of early care and education, and the opportunity to partner on a new course, “Science and Math in the Early Childhood Classroom” is the next step in our work preparing pre-service early childhood educators. As the largest early childhood teacher training program in New Mexico, CNM is deeply committed to training educators to prepare the next generation of children for school and life success. For *STEM Charging Stations for Young Children & Families*, CNM has committed to serving on the Project Team, co-developing the new three-credit course as part of its Early Childhood Associates Degree Program, requiring the inclusion of STEM activities in CNM students’ practicum experiences in local childcare and early education centers, giving students feedback on their facilitation of STEM activities for young children, participation in evaluation efforts, and contributing a list of its STEM-related activities to the project’s shared calendar.

The UNM Cariño Toy Lending Library offers thousands of educational toys, games, materials, videos, books, and other resources for check-out at no cost, primarily for early childhood educators and families who have young children. The library is also available for clients and families who don’t have the funds to access high-quality early childhood educational materials, making it easier to foster developmental needs as children grow. 1,200 people each

year check out materials from the toy and resource lending library. For the past couple of years, these resources have included Explora family memberships, which parents can check-out and utilize for no-cost access to Explora's 250+ hands-on STEM exhibits. Since the memberships were placed at the Lending Library in spring of 2016, 658 people have utilized them during 192 family visits. The Toy Lending Library has committed to serving on the Project Team and becoming a STEM Charging Station, providing Explora's STEM activity kits for check-out by families and hosting "Growing a Scientist" workshops for parents/caregivers to better understand how and why to do STEM with their young children. The Toy Lending Library also is committed to participation in evaluation efforts and will contribute a list of its STEM-related activities to the project's shared calendar.

Bernalillo County Early Childhood Accountability Partnership (ECAP) is a place-based effort to improve outcomes for children and their families, from pregnancy to age eight. They are an active collaboration of cross-sector partners, who have committed to work together to achieve a single measurable result: All Bernalillo County children are ready for and succeed in school. Using the guiding principles of collective impact, ECAP convenes partners committed to data-driven efforts that address the systems that perpetuate inequitable outcomes for young children and their families. ECAP partner sites will become STEM Charging Stations, places where young children can "power up" and extend their STEM learning, and ECAP has committed to serving on the Project Team, co-developing and hosting "Growing a Scientist" workshops for parents/caregivers, recruiting participants, participating in evaluation efforts, and contributing its STEM-related activities to the project's shared calendar.

New Mexico PBS reaches almost 700,000 households each week with 20,000 members in central and northern New Mexico. New Mexico PBS has extensive partnerships throughout the community. These partnerships include the K-12 community, higher education, dozens of community service organizations, and more. The *STEM Charging Stations for Young Children & Families* project aligns well with their mission to engage, educate, and connect New Mexico's communities through quality programming, services, and content. NM PBS has committed to serving on the Project Team, co-developing important messaging pieces that build awareness about the role of STEM education in early learning, and developing Public Service Announcements on NM PBS and its affiliated channel, which features 24-7 children's content. NM PBS also commits to sharing PBS Ready to Learn STEM initiatives on the shared project calendar and to participating in the evaluation plan.

As the backbone organization, Explora will provide leadership, coordination, management, and oversight of project activities. Explora will parlay its strengths—nationally-recognized informal science education programs, inquiry-based STEM exhibits, and engagement with over 90 community-based organizations—into support for the project. Explora is financially healthy with a \$4M budget and 100 staff. Known and respected state- and nationwide, Explora has led and partnered on several NSF- and IMLS-funded projects. Explora has the staff, budget, infrastructure, experience, and venue to host this work. Explora will provide and maintain a Basecamp site for communication and coordination of information and resources, and Explora has marketing resources, tools, and staff for communicating with audiences in both English and Spanish.

Explora will take the lead on evaluation, performance measurements, and tracking of project progress with the assistance of an external evaluator. University of New Mexico's (UNM) Center for Education Policy Research (CEPR) will be the evaluator for this project and will assess development and implementation, outputs, and outcomes. CEPR will collaborate with Explora, NMSL, CNM, and the other project partners in selecting key measures of progress and impact using integrated qualitative and quantitative methods. CEPR will collect survey and interview data from parents, librarians, and childcare providers on their participation and engagement with children's learning in math and science and the effectiveness of STEM enrichment activities. This project has the potential to inform Explora and educators around the state and country about the development and influence of meaningful early childhood learning experiences in preschool, libraries, and at home. CEPR will monitor the development and delivery of professional development activities and resources, noting successes and opportunities for improvement along the way. The evaluation will survey and interview participants to identify the Project's

practices and resources that influence young children’s interest in math and science. Information will be collected on the level of program participation by parents, children, childcare providers, and librarians, perceived impacts, and critical learning incidents, using on-site surveys and brief interviews administered to a randomly selected sample.

Participants will be asked to share examples of activities with young children that demonstrated gains in math and science interest and understanding, as well as the impact of activities on their engagement with children’s math and science education. Information about child and parent background characteristics also will be obtained to identify patterns related to outcomes. Scaled surveys will measure differential impacts of the various professional and personal development activities on their practices and confidence, as well as children’s learning of math and science. Data will be collected at regular intervals throughout the duration of the project and reported at least twice annually to the Project Team, in order to inform program improvement and document program effectiveness. The external evaluation of this project will include ongoing formative evaluation through the development process across both project years and summative evaluation in Year Two.

CEPR is a core center within the Institute for Policy, Evaluation and Applied Research (IPEAR), housed within the office of the Vice President for Research on the UNM main campus. CEPR is a comprehensive education research center with extensive experience in evaluating large-scale collective impact initiatives, such as Mission Graduate. Their research faculty and staff are highly skilled in the full range of qualitative and quantitative data collection and analysis techniques. CEPR uses evaluation strategies to accurately estimate program impacts dependent upon the quality of implementation and level of participation. Many of CEPR’s evaluations include formative and summative components to assist clients in improving interventions and providing funding agencies essential information about program effectiveness. CEPR’s evaluation approach is based on broad understanding of a client’s goals, resources, and target populations. CEPR works closely with them to implement a rigorous goal-focused appraisal that thoughtfully links activities, outputs, and outcomes with straightforward logic.

Explora also looks forward to working with any third-party evaluator IMLS designates through periodic teleconferences, email, and in-person gatherings, as deemed appropriate by IMLS.

The Project Team has taken time to consider the assumptions and risks we will face during our work, in addition to how we might mitigate those risks. One serious risk that all collective impact projects must consider is that, often, the grassroots communities most affected by an issue are not consulted or included in collective impact decision making. This can result in ignoring critical community knowledge, ownership, and support for sustainability and creating solutions that may not be appropriate or compatible with the population being served.¹³ Our Project Team has minimized that risk by including a number of grassroots organizations in our collective impact project—in particular, community-based organizations and their client families. Additionally, CNM serves predominantly low-income students, many of whom are working parents. CNM is the only community college in the country operating a program called the Center for Working Families, which has gained national acclaim for providing an array of financial, academic, and emotional support services to low-income students. CNM’s faculty and staff will contribute expertise about the community conditions that lead to the achievement gap, and CNM students will help develop STEM activities for local charging stations and give feedback about their effectiveness.

Another risk that can be faced when addressing community needs and underlying conditions is the potential treatment of adaptive challenges as if they were technical problems.¹⁴ Technical problems cause high distress that

¹³Wolff, T. (n.d.). Ten Places Where Collective Impact Gets it Wrong. Retrieved April 2, 2017, from <http://www.gjcpp.org/en/resource.php?issue=21&resource=200>.

¹⁴Linda M. Randall, Lori A. Coakley, (2007) Applying adaptive leadership to successful change initiatives in academia. *Leadership & Organization Development Journal*, Vol. 28 Issue: 4, pp.325-335.

can be alleviated quickly, because there's a specific problem and the technical know-how to provide solutions. Adaptive challenges take much longer to address and require new learning among lots of partners. Adaptive challenges, like eliminating the achievement gap, require ongoing experiments, efforts, and attitudinal change. The leadership team must be able to keep people in the game for a long time, even when work can be hard and frustrating. Our project team will mitigate this risk by spending some of our time in early planning meetings addressing the idea of technical vs. adaptive challenges head-on, so that we have a common language and shared understanding. We also will utilize the strong relationships we've built over many years to support and encourage each other when the work gets particularly frustrating.

STEM Charging Stations for Young Children & Families will be planned, managed, and implemented at Explora by a team of staff, led by Deputy Director and Director of Community Engagement, Kristin Leigh, and Executive Director, Joe Hastings, who has reorganized Explora staff around community engagement and made the listen, welcome, co-create initiative an institutional priority and key strand of Explora's Strategic Plan. A project management team will be comprised of Tara Henderson, Explora's Educational Programs Manager; Toni Belleranti, an experienced Explora Educator; Matt Makofske, Explora's Director of Administration and Special Projects; and Tamara Grybko, Explora's Program Data and Evaluation Manager. This team will work with a larger group of Explora's educators and support staff to implement the project and will join the larger Project Team, which includes Deanne Dekle from New Mexico State Library; Catron Allred from CNM; Joel Casas from UNM Cariño Toy Lending Library; Tracy McDaniel from ECAP; and Hollie Lovely from NM PBS. Additional project contributors include the students, patrons, and client families of all of the above institutions, who will contribute to our understanding of the community need, prototype our deliverables, and participate in the evaluation plan.

Funding will be provided to each partner organization to subsidize the time and talent of key staff assigned to this project, and to CEPR for implementation of the evaluation plan. There will be funding allocated for Summit planning and delivery, meeting expenses, and conference travel. Explora also will offer no-cost family memberships to all families participating in the parent workshops, and student support costs will be included for CNM students to enroll in the new course, "Science and Math in the Early Childhood Classroom." Finally, there will be expenses for both consumable and non-consumable materials, office supplies, and graphic design/printing of the STEM activity guides, curricular materials, and community calendar.

When museums transition from doing programs *for* the community to working systemically *with* the community to realize shared aspirations, we will become more stable and sustainable. Positive outcomes include new relationships and connections with local community-based organizations; new programs and projects that can be initiated in both the short- and long-term; new understanding about the concerns and aspirations among people in the community; and a clearer picture of the challenges inherent in becoming a systemic institution, along with an understanding that there is much work left to be done. The more engaged the museum is with the community, the more it becomes like a thread woven through a quilt; if the thread is pulled out, the quilt that makes up the community would unravel. As we move towards true engagement with partners, we can leverage each other's strengths and resources, support and stand up for each other's work, and have greater collective impact, helping all of our organizations be more stable and sustainable. Because *STEM Charging Stations for Young Children & Families* was co-developed with several cross-sector partners and utilizes local wisdom to be adaptable, flexible, and useful to our community, it can change more easily and scale up or down as needed over time, allowing staff to be confident about the project's sustainability. Because multiple partners share ownership of the project, there are more resources, funders, and stakeholders at the table to provide long-term support.