



Museums for America

Sample Application MA-253353-OMS-23
Project Category: Lifelong Learning

Sciencenter

Amount awarded by IMLS: \$248,429
Amount of cost share: \$254,978

The Sciencenter will address its community's need for outdoor family learning experiences and increase access to hands-on STEM education through the creation of four outdoor exhibit areas. The project team will use community input to drive the design and development of the exhibit areas, and create and test prototypes with a focus on accessible play-based activities to address learning declines resulting from the COVID-19 pandemic. Project activities will include meeting with the community and gathering input to define the learning goals, fabricating selected components of the exhibits, consulting with advisors and accessibility experts and testing prototypes, and continuing evaluation after the exhibits open to the public. As a result, the museum's role as a relevant and welcoming resource for science learning will be evident, and local children and families will increase their social skills and knowledge of the science process.

Attached are the following components excerpted from the original application.

- Narrative
- Schedule of Completion
- Digital Product Plan
- Performance Measurement Plan

When preparing an application for the next deadline, be sure to follow the instructions in the current Notice of Funding Opportunity for the grant program and project category to which you are applying.

NARRATIVE

Science Park: Family Learning in an Outdoor Space
Sciencenter

I. PROJECT JUSTIFICATION

The Sciencenter, a hands-on science museum in Ithaca, NY requests \$248,429 for *Science Park: Family Learning in an Outdoor Space*, a project to develop four exhibit areas in a 7,400 sq-ft outdoor space. The proposed project will support accessible, play-based learning in science, technology, engineering, and math (STEM) for children and their families.

Alignment with the IMLS goals and the Museums for America Program: This project addresses Goal 1 of IMLS’s Museums of America Program to Champion Lifelong Learning through the creation of four outdoor exhibits in a redesigned Science Park that promote active learning, prosocial behavior, and play – with a special emphasis on empowering younger audiences and families. Integrating hands-on science learning into outdoor spaces will engage Sciencenter visitors in multimodal and experiential STEM learning that prompts discovery. This project will tap into the value of outdoor spaces in museums and their ability to support full-body, play-based learning that addresses gaps in children’s social and emotional development (Chermayeff et al., 2010; Guirguis & Longley, 2021).

Advancing the Sciencenter’s Strategic Plan: The Sciencenter’s Community-Driven Strategic Framework 2019-2023 focuses on advancing our mission of cultivating a broad community of curious, confident, critical thinkers. In 2018, as part of the process of developing this Framework, the Sciencenter conducted surveys and interviews with hundreds of community organizations and other stakeholders, including groups that had not historically collaborated with the Sciencenter. This process identified a **need for greater access to hands-on science education in our community**, broken down into three directional indicators – “science, community, and accessibility” – that dictate the goals of this project.

Through *Science*, we are committed to “providing meaningful, multimodal, and authentic experiences” that engage visitors in science as “a process for learning about the world through experimentation and exploration”. Children and families use our existing science playground frequently as a place for outdoor, full-body play. But visitors come to the Sciencenter (and other museums) to learn, not just to run around (Tōugu, 2021). Developing inquiry-based exhibits in the Science Park will ***enhance the learning value of play at the museum***, especially play that is big, loud, and messy.

The *Community* directional indicator envisions the Sciencenter as a community hub that “regularly convenes the community for constructive conversations.” In the 1990s, local families quite literally built our museum through a series of community builds, including the science playground. The project will carry forward that legacy and renew the community’s historical connection to the Sciencenter by ***engaging the community in developing new outdoor exhibits that reflect their needs and values***. It is vital to our mission that visitors feel ownership over our museum environment.

This overlaps with the goals of *Accessibility*, which challenges our museum to “remove barriers to access” and ensure all museum content is “relevant, inclusive, and accessible.” The 30-year-old science playground will be updated with exhibits that reflect modern best practices for designing exhibits that are inclusive and accessible, including Universal Design, Exhibit Designs for Girls’ Engagement (EDGE), and integrating arts in STEM as an inclusive entry point for diverse learners who may not see themselves as people who “do science” (Hughes, 2022). The new Science Park will also include public exhibit space allowing free access to STEM learning, even outside of opening hours (see Supporting Document 1 for a preliminary concept map that outlines this area). These design techniques, public exhibits, and the prioritization of community input will ***increase the relevancy of our exhibits and help promote feelings of belonging at the museum***.

Project Need: There is significant evidence to support this need for greater access to hands-on science education, as well as its benefits. Research has long shown that hands-on and free-choice learning experiences, like those offered at the Sciencenter, increase children’s (and adults’) STEM learning and interest (Falk and Dierking, 2010). This type of out-of-school-time (OST) learning is especially timely and relevant to students, parents, and teachers as they face the significant challenge of mitigating children’s learning declines from the past two years. Data suggests that historical opportunity and achievement gaps continue to grow – due to systemic inequities experienced by non-white communities and those living with the impacts of poverty (Kuhfeld et al., 2022). The impact on achievement in STEM subjects is more pronounced (Dorn et al., 2020). These gaps are observable in the science and math proficiency scores of

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students living in Tompkins County (NYS Dept. of Ed., 2022). While most parents feel equipped to support school readiness for reading, writing, and math, over 50% do not feel confident in supporting their children's science learning (Silander, 2018).

Regressions in students' social skills and emotional maturity levels have also been reported and linked to isolation, stress, and lack of play during the pandemic (Blad, 2022). As with the opportunity and achievement gaps, the recent widening of these social skill gaps is disproportionate and is more noticeable amongst children with neurodiverse conditions and children living with the impacts of poverty, due to the compounding of multiple stress factors during the pandemic (Human Rights Watch, 2022; Palumbo, 2022). During interviews conducted with Sciencenter visitors in the fall of 2022 as part of a recent exhibit evaluation, local parents expressed a desire for more support in developing their children's social skills through family learning and interactions with other museum visitors.

Addressing gaps in achievement and social skills through outdoor play-based museum learning:

Play is an effective tool used by museums to explore scientific concepts and promote the development of STEM process skills like observation and inquiry; this is true across all age levels (Broadhead, 2007; Chermayeff et al., 2010). Play also promotes children's social and emotional development, helps manage stress during crises, and contributes to academic achievement (Guirguis & Longley, 2021; Palumbo, 2022). "Play" in the context of museum learning and this project can be defined as a set of behaviors/characteristics which include engaging with the environment, social interaction with family members or other visitors, and valuing the learning process over the end result (Bibble, 2013).

Outdoor family learning experiences, like those developed through *Science Park*, can help bolster science engagement and learning for children, contributing to long-term success (Falk and Dierking, 2010; Sobel, et al, 2021). The outdoor Science Park will also be more effective than our indoor museum spaces at promoting certain types of full-bodied, active play (Storli & Sandeseter, 2019). Recent research suggests that this approach to embedding playful learning in architectural design (or exhibits) can increase cooperative interactions among children and between children and caregivers (Brenna Hassinger-Das et al., 2020). Using exhibits to motivate cooperative science play in the new Science Park will help kids learn important social skills like empathy, cooperation, and friendship (Broadhead, 2007; Farmer, 2017).

Responding to immediate feedback on existing opportunities for outdoor play:

Recently, the Sciencenter is finding it more difficult to adequately support high-energy, full-body play like "rough-and-tumble" and "large-motor" at the museum. This is due to various factors including, a steady increase in visitation, growing programming needs, and an observed increase in children's desire for these types of play. These types of play are beneficial to child development but can become unnecessarily risky or disruptive for other visitors if not properly supported (Storli, 2021). Sciencenter staff clarified this problem during an internal audit of the play types supported by our museum, conducted during a workshop in August 2022. Partner organizations, the Greater Ithaca Activities Center and the Latino Civic Association of Tompkins County, also provided relevant feedback during reflections on 2022 summer camp collaborations. Both organizations indicated that better outdoor learning spaces in our community would enhance learning and support future summer programs at the museum; field trip participants will also benefit. Enabling all types of play at the Sciencenter supports inclusive learning and social and emotional development (Miller & Almon, 2009). *Science Park* will also address opportunities to enhance "sensory" and "art-based" play at the museum (see initial concepts and play types supported in Supporting Document 1, "Science Park Concept Map").

This project will hands-on museum learning, outdoor environments, and play as proven tools for addressing opportunity and achievement gaps, especially among children of color and those experiencing poverty (Afterschool Alliance, 2022; Huerta Migus, 2014). Children and families will participate in free-choice learning and play through outdoor exhibits that encourage collaboration and develop abilities in STEM. Ultimately, the new outdoor Science Park will support play that is too loud, too messy, or too big to fit inside, enhancing the value of our museum as a space for learning and supporting the healthy socio-emotional development of children.

Target Group and Project Beneficiaries: *Science Park: Family Learning in an Outdoor Space* will target our core audience (children and youth ages 0-12) and their families. Deficiencies in science learning and social skills at this age

will compound over time, increasing the cumulative impact of any disparities and widening opportunity and achievement gaps later in life (Dorn et al., 2020). We will collect additional input from this target group about their needs during a pre-design phase from November 2022 - September 2023. This includes community listening sessions with visitors, volunteers, staff, partner youth & family services organizations, and other stakeholders to better understand the specifics of the target group's desire and vision for outdoor learning spaces in our community. The timing of Science Park is critical, allowing us to maintain trust and buy-in from the community and use the momentum from this work to transform the Science Park with new exhibits.

The project's beneficiaries will include museum visitors, K-12 educators and their students, partner organizations, summer camp participants, and Sciencenter volunteers and staff. The Sciencenter welcomes approximately 70,000 visitors each year from April-Nov when the Science Park is open (we close our outdoor spaces from Dec-March due to snow). Approximately 95% of our visitors are families with children, about 30-40% are from Tompkins County (42% rural) and about 80-85% live in New York State. The reimagined Science Park will open in June 2025. We expect that it will benefit over 700,000 museum visitors from 2025 - 2035 through outdoor play-based learning that contributes to the development of STEM process skills and social and emotional learning. Programs and activities that use the Science Park will also be improved, benefitting an additional 2,200 educators & students and 180 summer campers each year.

This project will prioritize benefits to key demographics of visitors who are historically underrepresented or underserved in STEM, including people experiencing poverty, people of color, and people with disabilities. The Sciencenter is located in the neighborhood of Northside which has historically been home to people of color and immigrant populations and was an industrial area until the late 20th century. Our census tract and an adjoining tract are both listed as opportunity zones with poverty rates of 27% and 37%, and many of our neighbors are experiencing opportunity and achievement gaps. Their input will be included in project activities through concept refinement and prototyping to ensure their ideas and vision are represented in the new Science Park exhibits. Input from people with disabilities will help ensure that all areas of the new Science Park go beyond simple ADA compliance and are fully inclusive and empowering for people with a variety of lived experiences with disabilities. Project partners and advisors will assist in collecting this feedback as described in the project work plan.

II. PROJECT WORK PLAN

In support of these children and families, the Project Team will carry out five overarching areas of work, including 1) refining initial design concepts from the pre-design phase to create a Science Park comprised of four exhibit areas, each with a dedicated focus and associated learning goals; 2) design interactive, play-based exhibits for these areas through iterative prototyping with children and families; 3) finalize exhibit designs, fabricate, and install an "anchor" exhibit for each exhibit area; 4) conduct evaluation and track performance measures, and; 5) disseminate updates on *Science Park* with the local community and museum field. As described in the Schedule of Completion, the Sciencenter will begin this two-year project in September 2023 and complete it in August 2025.

Year 1: The Project Team will begin by refining the concept drawings and key recommendations from the pre-design through additional community input to organize the Science Park into four distinct outdoor "exhibit areas." (Supporting Document 1, "Science Park Concept Map"). Each exhibit area will be defined by a "big idea" – an unambiguous statement of its scope and purpose (an exhibit design tool) – along with learning goals and look/feel designs that will immerse visitors in that section of the Science Park. This work will be supported by the external evaluator's front-end evaluation, an accessibility audit conducted by the Finger Lakes Independence Center (FLIC), and insights from a kickoff meeting with advisors and FLIC. Starting in March 2023, the Project Director and Exhibit Fabricators will begin designing the "anchor" exhibits, one for each of the four exhibit areas that embody the feel, focus, and goals of that environment. This may include the redesign of an existing exhibit from the science playground that the community is interested in retaining. Iterative prototypes of new and redesigned exhibits will be built and tested to develop hands-on experiences that are accessible and engaging for the target audience and address learning goals. The Project Director and external evaluator will develop formative and iterative evaluation tools to support this testing and refining of exhibits through robust prototyping with museum visitors. To ensure input from key audience demographics, prototyping will also include participants from ongoing Sciencenter outreach programs that serve families living with the impacts of poverty

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and through dedicated prototyping activities with classroom educators, students, and children and caregivers who have disabilities. Labels and signs will be developed based on learning goals and look/feel designs to support the environmental design of exhibit areas. These will be tested and revised alongside the anchor exhibits. This Year One work will be facilitated by regular meetings of the Project Team (at least 4-5/month) and quarterly meetings with FLIC and advisors for planning, brainstorming, exhibit development, prototype review, and evaluation activities.

Year 2: Bi-monthly meetings of the Project Team and quarterly meetings with FLIC and advisors will continue. This will ensure continuous feedback, especially on accessibility, as the project team improves anchor exhibits and the environmental design of exhibit areas through prototyping. The Director of Programs & Partnerships will plan programs and activities that can be facilitated by staff or volunteers in the new Science Park. FLIC and other partner organizations will provide input. These interactive programs will activate additional learning in that space during summer camp, field trips, or regular opening hours. Late-stage prototypes will be finalized by February 2025 and Exhibit Fabricators will begin building the anchor exhibits. Final graphics will be produced, including murals or other art. Installation of exhibits will commence in May 2025. The reimagined Science Park will open to the public in June 2025 with a community event celebrating their contribution to the project. Evaluation data will be collected from exhibit visitors during the final two months. Project results and developmental evaluation reports will be published online.

Project Risks: The Project Team has examined the associated risks of this project and considered how they might be mitigated through proper planning or intervention. The most serious risk is that this project does not address the needs of the target audience. We are confident in the justification for this project – as informed by community input and reports on the present circumstances impacting children’s STEM learning and social and emotional development. The potential for this risk is being addressed in advance of the project through community listening during the pre-design phase. During the project, community input will be incorporated through front-end evaluation, concept refinement, and prototyping of the exhibits and exhibit areas to further mitigate this risk. Regular check-ins with FLIC, advisors, and the external evaluator will also provide accountability in ensuring that this input is reflected in the exhibits.

Rising inflation also poses a potential risk (7% in 2021; 8.3% in 2022, as of Sept. 21; compared to 1.75% average from 2011-2020; Amadeo, 2022). The project budget assumes average increases in costs of salaries & wages, supplies, materials, and equipment. If material costs skyrocket, the Sciencenter will solicit additional funds from donors, foundations, and state and federal agencies to support *Science Park*. If necessary, the Project Team will re-budget and may have to scale back the number of exhibits we construct.

Finally, the weather is always an uncertainty when working outside. The Schedule of Completion is developed based on seasonal patterns, with no plans for outdoor fabrication or installation in Jan-Mar. If late snowfall or excessive rain cause delays in the installation of final exhibits, the Project Director may have to meet with the external evaluator to revise the opening date and plans for final data collection.

Project Planning, Implementation, and Management: The project will be carried out by Sciencenter staff, led by *Adrienne Testa, Director of Exhibits & Facilities*. Additional expertise and accountability will be provided by consultants, an external evaluator, and a panel of advisors. As Project Director, Adrienne will provide overall leadership and guidance to the Project Team and assure that the *Science Park* stays on schedule and on budget. She will also oversee concept refinement, exhibit prototyping, and evaluation through regular check-ins with FLIC, advisors, and the external evaluator. Adrienne currently manages all aspects of exhibit engagement at the Sciencenter including the development of new interactives and exhibitions. Under her guidance, the Sciencenter recently completed the development of *Life on the Edge* (NASA #NNX16AM22), a 2,000 sq-ft traveling exhibition about the search for life beyond our solar system and *Engineer. Design. Build.* (IMLS #MA-10-18-0132-18), a 1,500 sq-ft permanent engineering exhibition at the Sciencenter. In the year leading up to *Science Park*, Adrienne is coordinating the community listening sessions and content planning during pre-design and will ensure that visitor input before and during *Science Park* is reflected in the outdoor exhibits.

Key members of the Project Team include *Michelle Kortenaar, Executive Director*, who will provide insight on strategy and support the Project Director in tracking progress and assuring that all performance measures are met. Michelle has more than three decades of experience managing and directing STEM education programs in informal and formal

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settings, including 11 years serving in leadership roles at the Sciencenter. *Lucas Fredericks and Julian Pompilio, Exhibit Fabricators*, will work together to identify exhibition parameters and carry out the design, prototyping, and fabrication of all exhibition components. Lucas and Julian have over 16 years of combined experience in developing interactive museum exhibitions and in the past three years, have worked closely with Adrienne to develop two new permanent indoor exhibitions and one new traveling exhibition. *Ali Jackson, Director of Programs & Partnerships*, will integrate family learning activities into the outdoor exhibit spaces, developing the plan for activating them through new and ongoing programs facilitated by Sciencenter educators and volunteers. She will also assist during the concept refinement and prototyping phases, offering feedback as a professional educator and coordinating community testing of exhibit ideas during ongoing outreach programs. Ali has over 12 years of experience leading the development of public programs, activities, and educator professional development in support of science education and oversees the Sciencenter's work as a key partner in the National Informal STEM Education (NISE) Network.

This core project team will also be supported by other Sciencenter staff. Our Project Manager will work closely with Adrienne and Michelle to monitor budgets, timelines, and progress toward deliverables. The Education Program Coordinator will support Ali in developing and facilitating activities in the reimagined Science Park. The Volunteer Manager will coordinate the organization of all volunteer-facilitated activities in the new outdoor space, including training and scheduling for new and existing volunteers. The Public and Media Relations Manager will manage all external communications about project activities including press releases, social media updates, and all marketing and promotion for the new exhibits. Each of these staff will also assist in channeling day-to-day visitor observations, feedback, and reviews into the development process.

The Finger Lakes Independence Center (FLIC) will provide consulting expertise on accessibility and meet quarterly with the Project Team to provide feedback and facilitate exhibit prototyping with children and caregivers with disabilities. FLIC is an Independent Living Center (ILC), one of 40 nonprofit facilities throughout New York state that provide services that assist New Yorkers with all disabilities to live fully integrated and self-directed lives. It is governed by a majority of people with disabilities and staffed primarily by people with disabilities. FLIC's work includes direct services like student support and language classes, which benefit over 2,000 people annually as well as advocacy efforts that address structural barriers to realizing a more inclusive society for people of all abilities. FLIC has previously conducted accessibility audits of the Sciencenter's exhibits, programs, and media in 2020-2022 and supported exhibit prototyping for engineering experiences in the Watergates Gallery. FLIC's work will be led by *Teressa Sivers, New York Connects Specialist*, supported by other staff as necessary. Sciencenter has also enlisted an external evaluator, *Sarah Cohn, Principal Evaluator* at Aurora Consulting to lead the evaluation and assist in performance measurement reporting and project tracking.

Finally, a panel of six advisors has been established to provide input on the initial exhibit concepts and offer additional feedback at key points respective to their areas of expertise. These advisors include Megan Dickerson, Director of Exhibits at Birch Aquarium, whose thinking and experience around playwork and the importance of play will support the types of visitor experiences we're aiming to develop in *Science Park*. Michele Kloda, Director of Innovation & Design at the Morehead Planetarium will supplement the exhibit design expertise of the project team with an outside perspective based on her significant experience in designing accessible outdoor exhibits. Tom Rockwell, Creative Director at the Exploratorium has spent his career developing exhibits that integrate art and science learning and will assist the Project Director in using art to immerse visitors and enhance learning in *Science Park*. Early in his career, Tom also consulted with the Sciencenter on the construction of our original Science Park in 1993. Marianella Casasola is a Professor and Senior Associate Dean for the College of Human Ecology at Cornell University whose knowledge and research on childhood development will support the development and tracking of learning goals for *Science Park* in support of prototyping and evaluation activities. Caleb Thomas is a local artist and the Ithaca Murals advocate/organizer. Caleb is a guiding force behind the public art movement in Ithaca, NY, which has gone from about 15 murals in 2009 to over 200 with plans for more. Caleb has supported several previous Sciencenter projects including a community mural process that resulted in 20 community-produced mini-murals on the outside of our museum. He will support the Project Team in identifying opportunities and specific artists to contribute to the goals of this project. Justina Fetterly from Ithaca Neighborhood Housing Services (INHS) plans community engagement events that support local families living in

affordable housing. She will assist the Project Team in facilitating inclusive and creative ways of engaging families from the surrounding Northside neighborhood in concept refinement and prototyping activities. This panel of advisors will provide outside perspectives and expertise that support accountability in tracking performance measures and contribute to more effective exhibits which reflect emerging best practices and community input.

Allocation of Time, Finances, Personnel, and Other Resources: The project budget is \$503,407 with \$248,429 requested from IMLS and \$254,978 contributed as cost-share, in the form of in-kind staff and volunteer time, a portion of indirect costs, and matching cash funds from regional grant funders and corporate sponsorships. This budget and scope of work are reasonable and informed by the Sciencenter's 35+ years of experience developing hands-on exhibits and programming for children and families. In addition to these financial resources, this project will also require the strong team of staff, partners, and advisors listed above. Our on-site workshop has all the necessary tools, equipment, and space to complete this project. Members of the project team are trained in Universal Design and EDGE and have combined expertise in carpentry, metal fabrication, and product design. Direct access to these resources and expertise enables a deeper, more reflexive design phase by allowing the project team to rapidly respond to visitor feedback and observations, and prototype multiple iterations of exhibits. The evaluation and dissemination of project activities will be aided by the Sciencenter's leadership role in the NISE Network, a national community of informal educators and scientists from over 300 museums and libraries working together to activate and broaden lifelong STEM engagement.

This project is supported by a pre-design phase taking place from November 2022 - October 2023. In preparation for this project, the Sciencenter is also renovating structural elements of the existing outdoor spaces. This includes reclaiming an unused walkway to add 600 sq-ft of new exhibit space that will be freely accessible to the public, redesigning the exterior fence, and updating the ramps and other surfaces in the Science Park to increase accessibility. We will also be addressing the viability of four-season use. Sciencenter's investment in the pre-design phase and construction is approximately \$150,000. These costs precede this project and are not reflected in the proposed budget.

Tracking Progress: Tracking and evaluation will be supported by Aurora Consulting, an external evaluation firm with extensive experience evaluating informal STEM learning experiences, including previous Sciencenter exhibits. The external evaluator, Sarah Cohn will conduct front-end evaluation during concept refinement using surveys and interviews with the community to gather feedback on the "big ideas" and learning goals for each exhibit area. Formative and iterative evaluation conducted through prototyping will collect feedback to assess exhibit quality and effectiveness in addressing learning goals. Adjustments to exhibits and exhibit areas will be made as necessary to improve use, understanding, engagement, and accessibility. Prototyping data will be collected by the Project Team through observation, surveys, and interviews with visitors, staff, and community members. Training and support in developing evaluation tools for the formative evaluation will be provided by the evaluator. Regular check-ins (monthly) between the evaluator and Project Director and a Year 1 report analyzing front-end and formative evaluations will provide ample opportunity and resources to monitor project activities and adjust as needed. Finally, the Project Director and other Sciencenter staff will monitor the schedule, activities, and budget through regular check-ins to track progress. Project updates will be shared with the community through newsletters and social media and with the museum field through presentations and panel discussions for colleagues at national and regional conferences of professional associations.

III. PROJECT RESULTS

The Sciencenter's long-term vision for the redesign of the Science Park will not be complete by the end of this project. *Science Park* will set the foundation for the types of child and family experiences and activities that the outdoor area will provide and support the development of anchor exhibits that set the tone and define the focus of the different exhibit areas. Instead of a summative evaluation, the Project Director and external evaluator will conduct a developmental evaluation that focuses on capturing how the project innovated, adapted, and responded to input from the community. It will also examine the following overarching questions that relate to the intended results: 1) the extent that community member's ideas and visions for Sciencenter-based outdoor play areas are incorporated into the project; 2) how the Science Park redesign has impacted the community's understanding and perspective of our museum and its mission; and 3) how the exhibit ideas were revised to best fit learning goals (see Draft Evaluation Plan, Supporting Document 2). Data

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will be collected by the external evaluator after the redesigned Science Park opens in summer 2025 through onsite observations and interviews with local children & families to understand skills and social development and changes in perception. Analysis of these questions will also be supported by the front-end evaluation and formative prototyping activities described above, online reviews, and reflections with the Project Team.

In addition to the statements outlined in the required Performance Measurement Plan, we will collect and report data on short-term objectives related to community participation in offering feedback on A) exhibit concepts and learning goals (150 community members, 5 organizations, and 25 classroom educators) and B) exhibit prototypes (500 children and caregivers). It is anticipated that the efforts to involve the community in the planning, design, and delivery of this project will generate the following intended results (also outlined in Supporting Document 1, "Logic Model"):

- Local children and families, demonstrate increased STEM process skills development and social and emotional learning tied to the learning goals informed during concept refinement
- Our regional community, 1) provides feedback on Science Park concepts and exhibit learning goals; and 2) sees their contributions to *Science Park* and their vision for outdoor spaces reflected in the exhibits
- Sciencenter, 1) increases our exhibit offerings that support playful outdoor science learning; and 2) increases our role in the community as a trusted source of science information and expert in STEM engagement

This project will contribute to long-term societal benefits in our region related to science education, childhood development, and attitudes about the Sciencenter. Federal investment in this project will increase the Sciencenter's capacity to address the long-term impacts of learning loss and social skill gaps in our community. Specifically, local children and families will have increased resources to support them in developing science process skills and applying them to their everyday lives. Science skill-building and social and emotional learning will take place through outdoor exhibits that promote play and inspire curiosity, confidence, and critical thinking. *Science Park's* emphasis on community input and accessible design will support these benefits and ensure they are inclusive of nearby families living with the impacts of poverty and people with disabilities. Project activities will also contribute to developing relationships with a new generation of local families who feel a sense of ownership over the Sciencenter and its exhibits. This attitude traces back to the museum's early history of "community builds" and is sustained through continuous community involvement in the design of Sciencenter resources and activities. This feeling of ownership is essential to the Sciencenter's long-term relevance and visitors' feelings of belonging at our museum.

Tangible Products: This project will result in a redesigned 7,400 sq-ft, two-story Science Park informed by community input and accessibility audits that are organized into four distinct outdoor exhibit areas, each with a dedicated focus and learning goals. *Science Park* will support the design and prototyping of interactive exhibits and the fabrication of four "anchor" exhibits, one for each area, that set the tone and exemplify the desired visitor experience. An exhibit activation plan will be developed to support the facilitation of new and existing inquiry-based outdoor activities in the new Science Park by Sciencenter staff and volunteers. Two evaluation reports will be developed, a Year 1 annual report to assist in tracking progress and a developmental report at project-end to evaluate project results and inform future work in the Science Park beyond the lifetime of this project.

Sustaining Project Benefits: This project directly supports the Sciencenter's vision of a world where people explore, connect, and create through science. By defining and anchoring the exhibit areas of the redesigned Science Park, this project lays the groundwork to support the future development of additional outdoor exhibits for that space. Together, with the results of the developmental evaluation, the Project Team will be well equipped to continue enhancing the Sciencenter's outdoor play-based learning environments in support of *Science Park's* intended outcomes. These projects could be funded by future grant requests to regional foundations and state and federal agencies, including IMLS. Sciencenter will ensure that these exhibits are properly maintained and remain relevant for years to come.

Schedule of Completion
Science Park: Family Learning in an Outdoor Space
 Sciencenter

TASK	YEAR 1						YEAR 2					
	September 1, 2023 - August 31, 2024						September 1, 2024 - August 31, 2025					
	Sept-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-June	July-Aug	Sept-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-June	July-Aug
Concept Refinement												
Community review of pre-design to narrow design concepts	█	█	█									
Accessibility audit supported by FLIC	█											
Kick-off meeting with the Project Team including FLIC and advisor panel (virtual)		█										
Define four exhibit areas with "big ideas" and learning goals	█	█	█									
Content development and planning	█	█	█	█								
Refine the look/feel and design of the exhibit areas	█	█	█	█	█							
Exhibit Design & Prototyping												
Prototyping and iterative development of anchor exhibits				█	█	█	█	█	█			
Exhibit labels/signs developed and tested					█	█	█	█				
Planning programs & activities to activate the Science Park once fabrication is complete							█	█	█	█		
Exhibit prototypes and labels reviewed with FLIC for accessibility and inclusion		█		█		█		█		█		
Advisors consulted for feedback and subject matter expertise		█		█		█		█		█		
Final design drawings for anchor exhibits								█				
Fabrication												
Materials acquisition					█	█	█	█	█	█		
Graphics production for the Science Park and outdoor exhibits; including murals									█	█	█	
Build anchor exhibits									█	█	█	
Install anchor exhibits											█	
Evaluation												
Front-end evaluation by the evaluator (surveys and interviews about exhibit areas, big ideas, and learning goals)	█	█										
Develop evaluation tools to aid in prototyping			█	█	█	█						
Monthly check-ins with evaluator on prototyping			█	█	█	█	█	█	█			
Formative evaluation via exhibit prototyping with visitors				█	█	█	█	█				
Review prototypes against initial community feedback				█		█		█				
Review of project expenditures	█	█	█	█	█	█	█	█	█	█	█	█
Calculate in-kind staff time and other cost-share		█		█		█		█		█		█
Review schedule of completion, activities, and milestones			█			█		█		█		█
Review/counting of community participation in project activities		█		█		█		█		█		█
Survey/interview museum visitors in new Science Park												█
Developmental evaluation prepared by the evaluator												█

TASK	YEAR 1						YEAR 2					
	September 1, 2023 - August 31, 2024						September 1, 2024 - August 31, 2025					
	Sept-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-June	July-Aug	Sept-Oct	Nov-Dec	Jan-Feb	Mar-Apr	May-June	July-Aug
Dissemination												
Press releases about project start and exhibit opening	■									■		
Updates on the project shared with the community via social media and newsletter		■		■		■		■		■		■
ASTC Conference presentation							■					
ACM Conference presentation									■			
Opening of new Science Park with community celebration											■	■
Results and evaluations reports published online												■

Digital Products Plan

Science Park: Family Learning in an Outdoor Space Sciencenter

TYPE

The Sciencenter anticipates creating the following types of digital content during the proposed project period:

- Slideshows, photos, and other digital materials produced for presentations about the project at national and regional conferences, including the Association of Science and Technology Centers (ASTC) and/or Association of Children's Museums (ACM). Digital products will likely be in MS PowerPoint, PDF, MS Word, or JPEG format.
- Evaluation reports in PDF format.
- Images of project participants, partners, and Sciencenter staff in TIFF, JPG, or other suitable digital formats at 150 dpi, and at least 1000 px wide.

Additionally, project work files including brainstorming notes, notes from Project Team meetings or consultant and advisor check-ins, prototyping notes/data, and exhibit drawings/designs will be documented as MS Word documents, PDFs, Google Documents, or JPEG files. Final exhibit designs will be rendered as 3D design/construction drawings and formatted for CAD software (.3dm, .stp, or .obj) and CNC use (.crv and .tmp) to aid in fabrication. These plans and designs will be retained for future reference and may be included in conference presentations or evaluation reports. All documents will be formatted to 300 dpi.

AVAILABILITY

The Sciencenter will make the digital products produced as part of the proposed project available through:

- **MuseumTools.org:** MuseumTools.org is a website created and hosted by the Sciencenter. It is an online repository for resources such as research on Sciencenter programs and exhibits, educator activity plans, guides for museums on developing partnerships, and other museum management & administration resources. Any digital products created as part of this project will be posted to MuseumTools.org, which is maintained by the Sciencenter and available via any standard web browser.
- **Informalscience.org:** Informalscience.org is a website created and maintained by the Center for Advancement of Informal Science Education (CAISE). The site hosts a community repository of project descriptions, research, and evaluation products, posted by museums and other informal STEM education professionals. All of the materials on CAISE are made available in a manner that permits the public to access, read, download, and analyze the work without charge. All evaluation reports will be submitted to this repository. CAISE is a frequent source of information that is used by informal STEM educators to better understand how to deliver engaging and impactful learning experiences to their communities.
- **Social media and Sciencenter website (sciencenter.org):** The Project team will post photos and brief project updates to the community on our website and social media pages. This includes any marketing and promotion for the exhibit. The Sciencenter is active on Facebook, Twitter, Youtube, and Instagram. Our website is accessible via any standard web browser. Project partners and advisors will be encouraged to share these updates within their own networks as well.
- If the conference proposals are selected for presentations at ASTC or ACM annual conferences, digital copies of the presentations will be made available to conference participants via ASTC and/or ACM, their websites, and uploaded to CAISE. If appropriate, they may also be uploaded to the Sciencenter's social media.

Access

The content created as part of the proposed project will be public domain. The Sciencenter will not assert ownership rights over the digital content created. However, we will specify that anyone using the content should credit the Sciencenter and acknowledge that the content was developed in part with funding from IMLS. We do not anticipate that these products will implicate any significant privacy concerns or cultural sensitivities. However, any references to community/staff feedback, prototyping input, and other evaluation responses will be anonymized. Similarly, any photos with identifiable individuals will only be shared with the expressed consent of those pictured.

Sustainability

The sites that we are using to disseminate digital assets (MuseumTools.org, Sciencenter.org, and social media accounts) are maintained by the Sciencenter. They are key tools that support our mission as an organization and will continue to serve as a resource for other museums. These sites and social media are regularly reviewed and maintained by the Sciencenter's Public Relations and Media Manager. InformalScience.org is maintained by CAISE with funding from the National Science Foundation. All digital products will also be stored on the Sciencenter's internal server, which is routinely backed up and maintained by a contract agreement that the Sciencenter has with a local company, Synergy IT Solutions.

Applicant Name: Sciencenter

Project Title: Science Park: Family Learning in an Outdoor Space

Performance Measure	Data We Will Collect (e.g., counts, costs, weights, volumes, temperatures, percentages, hours, observations, opinions, feelings)	Source of Our Data (e.g., members of the target group, project staff, stakeholders, internal/external documents, recording devices, databases)	Method We Will Use (e.g., survey, questionnaire, interview, focus group, informal discussion, observation, assessment, document analysis)	Schedule (e.g., daily, weekly, monthly, quarterly, annually, beginning/end)
<p>Effectiveness: The extent to which activities contribute to achieving the intended results</p>	<ul style="list-style-type: none"> • Monthly, the Project Director and external evaluator will review feedback on exhibit prototypes gathered using observation of visitors to assess how the exhibits are contributing to the intended learning goals. • Quarterly, through informal debrief discussions with the external evaluator, we will assess our progress against the stated goals and overarching questions of the proposed project. • Quarterly, the Project Team will compare the number of people who provided input on concept refinement and prototyping activities against the numbers proposed for the project to assess the effectiveness of our efforts at integrating community voices and feedback. • After the Science Park opens, the external evaluator will use observation and interviews with visitors to assess how the development of STEM process skills and social and emotional learning are taking place. • At the end of the project, the external evaluator will present a developmental evaluation that examines learning goals, how the project has reflected community contributions, and how the new Science Park impacts the Sciencenter’s role in our community. 			
<p>Efficiency: How well resources (e.g., funds, expertise, time) are used and costs are minimized while generating maximum value for the target group</p>	<ul style="list-style-type: none"> • Monthly, the Grants Manager and Project Manager will review all project expenditures to ensure they are necessary and allowable and ensure that work is continuing as planned/budgeted • Quarterly, the Grants Manager and Project Director will assess and calculate cost-share, including in-kind staff time from payroll records, volunteer hours recorded in our volunteer management system, and accounting records of project expenses made using eligible cash match. • Every six months, the Project Director, Program Manager, and Grants Manager will review the Schedule of Completion, activities, and expenditures and make any necessary adjustments to work planning and spending. 			

<p>Quality: How well the activities meet the requirements and expectations of the target group</p>	<ul style="list-style-type: none"> • During the first 4 months of the project, the external evaluator will administer surveys and interviews with visitors, staff, and community members to collect input on exhibit area concepts. • To promote accountability to that community input, the Project team will review exhibit prototypes quarterly and compare them against the initial feedback collected from surveys and interviews during the concept refinement stage. • Quarterly, through informal discussion with the Finger Lakes Independence Center, we will assess whether exhibits are meeting the accessibility expectations of people with disabilities. • At the end of the project, the external evaluator will administer surveys and interviews with members of the target group and community partners who have been engaged throughout the project to understand how they see their input reflected in the Science Park and how the redesign shifts or changes their perception of the Sciencenter's connection to the Ithaca community.
<p>Timeliness: The extent to which each task/activity is completed within the proposed timeframe</p>	<ul style="list-style-type: none"> • Every six months, the Project Director and Project Manager will assess the fit between our proposed Schedule of Completion and actual activity completion dates. • Quarterly, the Project Manager will report to the Project Director on the progress toward planned activities.