

Building Library Professionals' Creative Learning Competency for Facilitation of STEM Programming

The MIT Media Lab Learning Initiative (J. Philipp Schmidt) requests funding of \$217,110 from IMLS for a one-year Lifelong Learning Project Grant to support public library professionals to become facilitators of creative STEM learning programs. Increasingly, public library professionals are charged with providing relevant STEM programming to their communities, yet many are unprepared to lead such activities. Applying a Creative Learning pedagogical model, this project aims to develop and deliver a series of in-person and online facilitation training workshops, foster a community of practice, and build capacity for library professionals to implement creative STEM programming in their libraries.

Statement of Broad Need: Public library professionals are tasked with offering programming to match the demand for STEM literacy among their patrons. In a national survey of public library professionals, 97% of respondents (n=438) said that they are interested in offering more STEM programming opportunities to their patrons, but common barriers, like feeling ill-prepared to lead an activity and lack of expertise in STEM topics, prevent them from beginning or increasing STEM programming.¹ Indeed, we have frequently heard these concerns voiced by our library collaborators as part of our work co-designing STEM programming with public libraries across the country as part of MIT's Public Library Innovation Exchange. Considering the growing number of roles that library professionals are asked to take on, it is infeasible to expect all library professionals to transform into STEM experts or instructors. Rather, more library professionals of all backgrounds could act as STEM learning facilitators if they had access to appropriate training opportunities.²

The Creative Learning pedagogy offers a way to support library professionals to take on the responsibilities and practices of STEM facilitation. Creative Learning is a pedagogical approach developed at the MIT Media Lab, rooted in constructionism and facilitation. It posits that people learn best when they are working on projects that they are passionate about, in collaboration with peers, and in a playful environment that encourages experimentation.³ Creative Learning environments are supported by a facilitator who guides learner interests rather than prescribes or directs their activities. Because of this, facilitators of such STEM learning experiences need not be subject-matter experts. Instead, through cultivating their own Creative Learning facilitation practice, library professionals can feel competent and confident to welcome, support, and guide diverse learners in creative STEM programming.

Project Design: We propose to design, deliver, and evaluate a series of in-person and online training workshops for library professionals to learn the fundamentals of Creative Learning facilitation for STEM programming. In addition, we will support regular opportunities for collective and critical reflection among participants—a key component for growing and sustaining a facilitation practice.⁴ Librarian professionals who participate in this training and accompanying community of practice (CoP) will be able to: apply Creative Learning facilitation best practices to their STEM program offerings; remix existing STEM learning content to align with Creative Learning values; leverage existing community expertise to support their STEM

¹ Hakala, Jim S., K. MacCarthy, C. Dewaele, M. Wells, P. B. Dusenbery, and K. LaConte. "STEM in Public Libraries: National Survey Results." *Space Science Institute's National Center for Interactive Learning*, 2016: 11.

² Lankes, R. David. "Expect more: why libraries cannot become STEM educators." Paper presented at the Public Libraries & STEM: A National Conference on Current Trends and Future Directions, Denver, CO, 2015.

³ Resnick, Mitchel. *Lifelong kindergarten: Cultivating creativity through projects, passion, peers, and play*. MIT press, 2017: 16.

⁴ Roque, Ricarose and Rupal Jain. "Becoming Facilitators of Creative Computing in Out-of-School Settings." *International Society of the Learning Sciences, Inc.[ISLS]*, 2018: 598.

Massachusetts Institute of Technology

programming; and feel confident and supported in their efforts to increase STEM learning opportunities for their patrons. This piloting project's focus will be divided into three activity areas:

I. Project Coordination and Oversight [20%] will focus on broad-based outreach to U.S. library communities and overall project management. Objectives: (1) advocacy and outreach to U.S. library communities to recruit 200 library professionals to participate in trainings; (2) planning and coordination of in-person and online training opportunities; and (3) engagement with existing communities focused on STEM learning in libraries (e.g., YOUMedia, STAR_Net, The Clubhouse Network).

II. Library Professional Training [50%] encompasses the design of a deliberate, outcome-oriented curriculum for training workshops and implementation of Creative Learning facilitation training opportunities. Objectives: (1) host two regional in-person training workshops in U.S. libraries and one open online course version; (2) collect data via focus groups of training participants for formative evaluation; and (3) identify 25 librarian professionals to serve as ambassadors for Creative Learning facilitation in their library.

III. Cultivation of a CoP [30%] includes the ongoing support of practitioners as they build out their Creative Learning facilitation practice and offer creative STEM programming in their libraries. Objectives: (1) host regular online meetups for group reflection on practice; (2) promote and maintain an online platform for discussion and resource sharing; and (3) support ambassadors to take on leadership roles within the CoP.

Project Team: This project builds off of prior work designing informal STEM learning experiences for the public library setting as part of the Public Library Innovation Exchange (PLIX)—an ongoing Knight Foundation-funded project done in collaboration with ten public library systems (Akron, Boston, Cambridge, Charlotte, Columbia, Macon, Milledgeville, Philadelphia, Somerville, and St. Paul) as well as over 250 library professionals from around the country (plx.media.mit.edu). In addition, the project team has had extensive experience designing and supporting a Creative Learning CoP for over 6,300 K-12 teachers around the world (learn.media.mit.edu/lcl).

Diversity Plan: Recruitment will prioritize early-career library professionals and under-represented populations in both STEM and the library field. Specifically, we will enlist the Association for Rural & Small Libraries (ARSL), the Joint Council of Librarians of Color (JCLC), the American Indian Library Association (AILA), and the American Library Association (ALA) Committee on the Status of Women in Librarianship (COSWL) to ensure there is opportunity for library professionals from all sectors.

Broad Impact: This project will train 200 library professionals on Creative Learning facilitation for informal STEM learning. Through the CoP—which will be sustained as part of the ongoing PLIX project—the spread of Creative Learning facilitation in libraries will extend beyond the scope of this grant, and library professionals will be empowered in their efforts to increase STEM learning opportunities for their patrons.

Budget Summary: The total budget for this project is \$217,110. Our estimated budget breakdown includes: \$25,000 for honorariums for 25 library professionals serving as Creative Learning ambassadors in their communities; \$85,000 for staff time to support curriculum development, project coordination, training delivery, and online community moderation and maintenance; \$6,000 for staff travel to trainings; \$32,000 for participant travel to trainings; \$18,000 for training conference expenses (food, room rentals, supplies, etc.) and indirect costs of \$51,110.