

The University of Wisconsin (UW) respectfully requests \$99,651 to support a National Forum to be held in partnership with the Maker Education Initiative (Maker Ed), a project of Tides Center. The Forum: ***Research and Assessment in Makerspaces***, will bring together leaders, especially those in library services, in maker-centered learning to review and build on current research, culminating in a white paper and serving as a springboard to launch the “Research, Evaluations and Reports” section of Maker Ed’s Resource Library [makedred.org/resources], a robust and freely accessible online repository that will contain relevant research, reports, white papers, and research-to-practitioner links for maker education.

NATIONAL NEED

More and more libraries are offering learning experiences through making and makerspaces. Three years ago, a Library Research Service survey noted that 41% of public library respondents offered maker activities in their library and another 36% were planning to do so. This past spring, IMLS, in partnership with the Children’s Museum of Pittsburgh and thought partners like Maker Ed, released a framework to support learning in museum and library makerspaces. As this momentum continues--as well as that for hands-on learning experiences in general in libraries--practitioners need ways to access and interpret the available research and apply it to their learning environments. This is especially true in libraries, where makerspaces are continuing to expand and are often becoming cornerstones of library -- and ultimately, community -- programming. Libraries will be able to simultaneously scale and deepen their efforts, for both the public as well as in partnership with community organizations, with focused research findings that support and propel their work forward.

UW and Maker Ed have been at the forefront of the research at the intersection of making and learning. For example, Maker Ed contracted with SRI International in 2016 to research the needs of maker educators (<http://makedred.org/community/research/>). The report included a key finding where K-12 formal and informal maker educators specifically stated a need for *searchable and segmented resource collections* that provide information on how making links to standards, specific grade-level skills, and offer evidence of effectiveness., in May 2017, Maker Ed hosted a Leadership Summit for maker educators, who collectively identified specific needs within the maker community. *Seventy-five percent of solutions generated were devoted to providing evidence of effectiveness of maker-centered learning* to practitioners, such as librarians, teacher-librarians., veteran teachers, out-of-school program participants, school administrators, and funders.

Similarly, Peter Wardrip at UW recently moved from the Children’s Museum of Pittsburgh (CMP) where he led, with IMLS, the work to create a framework for learning in museum and library makerspaces. Through this project, with over forty site visits to library makerspaces, the feedback pointed overwhelmingly to the need for access to, and further development in, building research and evidence that will help libraries make the case regarding bringing maker education into learning spaces, as well as to provide direction for engaging in making in ways that will be most effective for creating desired learning outcomes in the youth they serve.

PROJECT DESIGN

UW and Maker Ed will bring together a cohort of 25-30 researchers and practitioners who are leaders in maker-centered learning. These will include key representatives of libraries and other informal education institutions that have been at the forefront of this research. Initial conversations will be conducted virtually, surveying each participant on the publications and work they feel is key to scaling and deepening the work of maker-centered learning, that which has been done and that which needs to be done. We will convene participants in-person at a National Forum to share key findings and identify notable gaps as opportunities.

Once the cohort has identified the key publications and resources, as well as areas that need additional focus, a team of 2-3 key staff from UW and Maker Ed, as well as 5-10 members of the Forum cohort, will create an annotated bibliography and white paper for publication. Both publications will leverage the expertise of Forum participants, particularly those representing libraries, in order to bring attention and support to the maker-centered library community. These resources will then live online on Maker Ed’s freely accessible Resource Library (<http://makedred.org/resources/>), and serve as the cornerstone page as we launch our Research, Evaluation and Reports (RER) section. The RER section will also contain links to the primary sources of the

bibliography and other relevant information; it will be searchable and organized in a way that will provide easy access for all, especially practitioners interested in the field's work.

The project will be carried out in five phases:

1. Formalize all cohort members, including key representatives from public libraries across the nation, serving as thought partners throughout the project
2. Plan and host National Forum, to discuss key research areas that will increase the momentum and deepen the impact of maker-centered learning, specifically in library services
3. Collect proceedings of Forum, using them as a basis to publish a white paper oriented at and in partnership with the library community. Populate Maker Ed's Research, Evaluations, and Reports section of the Resource Library with the white paper as the cornerstone, and also including research papers, evaluations and reports that have been deemed most useful to the community
4. Launch Resource Library category; disseminate the Forum's findings and overall resources through Maker Ed's national networks, social media channels, partnerships, and annual Maker Educator Convening
5. Continue to present on findings at national conferences, such as ALA, PLA, YALSA and AERA, and utilize the insights to drive new directions for maker education research in libraries.

By using the Forum as a springboard to launch the RER section of Maker Ed's Resource Library, we will be building on an already successful and much used resource to bolster and expand the information and potential collaborators available to researchers, educators, policy-makers, administrators and other stakeholders, therefore helping to move maker education from a popular movement to a lasting educational reform in all communities.

KEY PERSONNEL

The National Forum will be led by Peter Wardrip (UW), Stephanie Chang (Maker Ed) and Jakki Spicer (Maker Ed). Peter Wardrip is Assistant Professor of STEAM Education at UW's School of Education, where he currently co-leads an IMLS-funded project to develop an observation tool to document evidence of learning in library and museum makerspaces. Stephanie Chang is the Interim Executive Director and Director of Programs at Maker Ed. She is responsible for overseeing Maker Ed's program & project offerings. She is currently collaborates with the MIT Teaching Systems Lab on a NSF-funded project examining embedded assessment in maker-centered classrooms. Jakki Spicer is the Director of Partnerships and Development at Maker Ed. She builds partnerships with program partners, foundations, and corporations, bringing together networks of individuals and institutions to support the long-term sustainability and growth of maker-centered learning.

NATIONAL IMPACT

Libraries have been among the leaders of the maker-centered learning charge for a number of years, developing a depth of understanding for a diverse set of audiences that stands as a model for how to best reach community members and youth learners at all levels. In order for these grassroots efforts to become widespread with greater impact, it would benefit educators to have open and free access to these resources in our Resource Library that include research findings, guides, PD/training resources, and best practices that are transferable across educational environments. We will also leverage Maker Ed's broad networks of maker educators and institutions, our large social media following, and our presence at conferences, webinars, workshops and meetings, as well as our annual Maker Educator Convening, to disseminate the resources created and collected.

Maker education is at a pivotal moment; in order to move it from an educational fad to a sustainable, lasting, and proven educational reform movement, available to all youth across the country, we must connect the research, practice, and resources that are currently available, and understand what is missing and who is best poised to take on those aspects.

BUDGET SUMMARY

The total budget of \$99,651 is requested to support Dr. Wardrip's time (\$7500), 40% time for Maker Ed personnel (\$34,816); travel for participants (\$17,500), stipends for those working on the bibliography (\$2500) meeting costs, including food, materials, and space costs (\$3,500); and indirect costs for the UW (53%) and Maker Ed (10%).