

Madison Public Library, Skokie Public Library & Waupaca Public Library Librarian's Toolkit for Digital Observation, Assessment, and Analysis

Project overview:

Madison Public Library (MPL), Skokie Public Library (SPL), and Waupaca Public Library (WPL) propose a three-year **National Leadership Project** grant to develop and pilot a librarian's toolkit for digitally collecting, organizing, and analyzing qualitative, observational data to better measure the impact of hands-on, creative programming for all ages (including STEAM exploration and open-ended play) for libraries of varying sizes and capacities and to create a model to disseminate these tools nationwide.

The impact of these tools would **promote lifelong learning** through supporting practitioners and participants in social emotional development and fostering deeper learning of 21st century skills such as critical thinking, creativity, and collaboration. This **\$412,662 total (\$242,335 grant funded, \$170,327 cost-share)** project would analyze the best way to further develop a prototype tested by the Bubbler at MPL in 2019, with the goal of creating an accessible and comprehensive toolkit for librarians in diverse communities to easily and consistently assess hand-on, creative program goals and outcomes.

Such genuine assessment would allow librarians to better tell compelling data driven stories of the transformational learning that happens in their hands-on, creative library experiences. It would also allow librarians to create a stronger reflective practice for their program design and facilitation, driving a continuous cycle of improvement towards greater learning outcomes for participants. By creating a plan for distributing these tools nationwide, this project would also create a community of strategic collaborators with a shared practice of measuring outcomes of social emotional development and 21st century skills - a community that many librarians operating independently in isolated locations often lack.

This project has the potential to fundamentally change the way we tell the story of impacts in library programming - moving from largely quantitative measures of attendance, to measuring genuine learning impacts of participants. The form of measurements will allow librarians to set ambitious but realistic goals for the outcomes of their programs and participants, and to be reflective of their successes and failures as they plan for the future.

Statement of National Need

Many public and school libraries across the county have successfully embraced hands-on maker, STEAM, and open-ended play programs. These programs appeal to patrons of all ages as fun opportunities to take initiative of their learning through open ended experiences, where activities are free of the pressures of traditional educational assessments (like pre- or post-testing). Yet, these same liberating attributes make it very challenging for librarians to assess impacts, a crucial step in the process of program development and refinement.

In the past several years, the [Public Library Association's Project Outcome](#) has made significant headway in changing the conversation of how impact is measured in libraries. They have created tools, trainings, and a platform that can guide librarians to think critically about the goals of their programs, what outcomes (changes in behavior, attitude, knowledge, etc.) they would like to impact, and indicators of success. Libraries set their programming goals for themselves, linked to their priorities, communities, and strategic plans. It is a strong starting toolkit for libraries to think beyond traditional quantitative measures of attendance or circulation. However, their tools for measuring and identifying indicators of impact are limited only to surveys from patrons, which struggle to capture the richness of learning during open-ended experiences in the library.

In 2020, the Connected Learning Alliance published an IMLS funded guide for [Evaluating Library Programming](#) - another strong tool for considering stakeholders, setting goals, and determining outcomes. Yet their suggestions for measurement rely on analog means of assessment that must be compiled by hand and are still highly dependent on patron surveys. Their consideration of documentation actually states, “Though many libraries have gotten excited about documentation, in practice it is hard to do” (Widman et al., 2020, p. 17).

These tools and others like them have set the stage for a change in the conversation of how libraries measure the impact of their programs, yet with the wide variety of innovative programming happening in libraries - STEAM exploration, Open-Ended Play, Digital Media production, Maker and Art based programming - the tools for documenting learning outcomes must innovate, too.

Madison Public Library (MPL), Skokie Public Library (SPL), and Waupaca Public Library (WPL) are regional leaders in their innovative hands-on, open ended programming initiatives. Their robust programming offerings include STEAM exploration, hands-on making experiences, and open-ended play opportunities both within their library walls and spaces like the Bubbler, the BOOMbox, and Media Labs, but also in partnership with strategic community partners across their communities. Over the past several years, these institutions have been on independent journeys of undertaking genuine assessment to determine learning outcomes and impacts in their spaces.

The Bubbler at MPL began its work in 2016, working with a team of UW researchers on a previous IMLS grant to analyze the learning in their spaces and other spaces like theirs (Halverson, Lakind & Willett, 2017). They determined a significant lack of assessment tools designed for the unique spaces and programs that were becoming more prevalent in public and school libraries and turned instead to the research of children’s museums (Willett, 2018). The project team shared their findings and exploration into applicable learning frameworks (Brahms & Wardrip, 2014; Gutwill et al., 2015; Loertscher et al., 2013) at the 2016 at the American Library Association Annual Conference in Orlando to gain feedback and perspective on their potential for use in public libraries. Intending to be a 50 person pre-session, over 150 participants arrived seeking to learn more. It was clear that the Bubbler at MPL was not alone in its need for measuring these types of innovative programming.

Skokie Public Library (SPL) has also sought to assess the learning of their patrons based on the goals of their spaces. They want their spaces to be springboards for further learning, inquiry and exploration. Yet, they have found assessment is challenging. It cannot be measured by merely capturing attendance numbers and, while they encourage staff to complete end of shift reports about patron interactions with staff, materials, and resources, that information even paired with photos doesn't always tell the full story. Without better ways to link data over time and collect data from similar experiences, they are unable to fully describe their impact.

Waupaca Public Library (WPL) has also put forward an increased effort towards intentional programming to promote 21st century skills – the 4 C’s: Critical Thinking, Communication, Collaboration and Creativity. Staff are encouraged to state desired outcomes prior to facilitating an activity. However, understanding the impact of their work relative to the needs of their community has been elusive. They have found their surveys have been self-serving, often with leading questions. and requesting feedback in writing has not been successful. Real analysis and assessment happens in interactions with users during programming, but it is challenging to capture consistently and difficult to communicate easily with internal and external stakeholders.

Over time, the Bubbler at MPL has continued its work into assessment practices, including broadened its learning framework from strictly maker centered outcomes to consider goals for social emotional development and a broader definition of 21st century skill building. They have designed smaller embedded assessments to

identify indicators of learning less passively observable (Appendix B), and have collected hundreds of data points in photos, field notes from conversations with participants, and documentation of artifacts and those smaller embedded assessments, using their framework to tag them as indicators of learning outcomes to draw conclusions about the impacts of their programs.

Yet, like their partners at SPL and WPL, they have found these piecemeal practices of assessment are time consuming, laborious, and challenging to maintain (Wardrip et al., 2019). The Bubbler has only managed to expand its practice through grant funded positions to build capacity and hiring interns each summer for programming facilitation and documentation when programming - a model that is neither sustainable or translatable to other libraries.

This ongoing work has put these three libraries on the project team at the forefront of the larger, national conversation of how to best assess and document learning in informal spaces. They have not been alone. The [IMLS Making Observations](#) project has also shown that observational data can definitively show learning outcomes in informal hands-on programs and spaces, and impact the learning of the participants as well as the facilitation and program design. However, the [observational tools](#) from the Making Observations project still suffer from the same issues this project team has faced. They exist on paper or in separate components. The Making Observations team has shared that documentation while facilitating is challenging and the analysis of the data is time consuming. It is also difficult to link observations to other media like photos or audio recordings, which can be especially informative during observations.

Observational assessment was a large topic of discussion and scrutiny at the 2019 IMLS National Forum: [Research and Assessment in Library Makerspaces](#) that librarians from Madison Public Library, Skokie Public Library, as well as many members of the advisory board participated in. The general consensus was that, while the results of projects like their own and Making Observations were exciting, there were many barriers to other institutions, particularly smaller institutions, in carrying out similar work (Chang et al., 2019). It was evident from the forum that there were still more questions than answers and solutions to quality observational assessment for libraries. The idea of shared digital tools was appealing, yet would require a team and funding to design them.

It was also discussed that quality observation requires training and practice, especially if librarians are to actively combat unconscious observational bias and incorporate best practices to protect the privacy of their participants (Louis & Betteridge, 2020). Without an evaluator on staff or research partner, the time and capacity for collecting and analyzing rich observational data to continuously improve practices, connect experiences and impacts over time, or share findings with diverse stakeholders is too much for an independent librarian. The National Forum itself was a novelty for many of the participating staff, who were delighted to be able to have conversations about assessment and evaluation with their broader community of practice. It was evident that a community of practice around assessment would be welcome, especially if librarians and researchers and evaluators were using similar tools in their spaces and could all learn from each other.

In order to measure qualitative outcomes through observation, librarians need stronger tools for collecting, analyzing, and reporting observational data and training to accompany them. The creation of a digital tool that would allow librarians to collect observational data and tag and link instances in various formats (photos, notes, or quotes) to the goals of their institutions and frameworks of learning would eliminate many of the barriers. Paired with a web platform that would allow librarians to sort, analyze, and connect observations from various programs to generate reports for diverse stakeholders, these tools would fundamentally change the way impacts of library programs are assessed. With many libraries contributing to the design and implementation of such a tool, it has potential to build a strong community (virtually or in person) around shared practices.

This practice of a set of unifying tools is already playing out in the museum world. [Project COVES](#) launched after its own National Forum in 2011 is “designed to unite museums across the country in launching an effort to systematically collect, analyze, and report on visitor experience data. By facilitating collaboration and discussion, developing common instruments, and providing training on how to use these instruments and make sense of findings, COVES enables museums of all types to become data-driven organizations focused on their audiences while providing a platform that allows museums to learn from one another.” This work or unified tools for measurement and collaboration has not yet been replicated by libraries. However, seeing COVES’ success gives this project team hope that such ambitious goals are possible.

Seeking to get the ball rolling, in 2018 Project Leader Rebecca Millerjohn worked with collaborators to develop a proof of concept application (Kumar et al, 2019; Kumar et al. (under review)) expanding in 2019 to work with a small development company to produce a prototype of a digital observational assessment app temporarily coined the Bubbler-MATic, funded by a small venture grant from the Madison Public Library Foundation. Their initial test of the tool observed 18 unique programs over 6 weeks in 4 public and 5 school library maker programs across Madison, WI (Appendix A).

The constraints of the pilot limited it to the data collection tool only, missing an analysis platform. Yet the results were exciting. The data collection app showed that a variety of observers with limited training were able to consistently and efficiently record indicators of 21st century skills like collaboration, perseverance, and creativity, as well as documenting indicators of “a-ha!” moments linked to outcomes in social emotional development. Sharing these rough observations - especially photos tagged with indicators of learning - with students in school settings resulted in rigorous reflections on activities and growth mindsets. Sharing the rough data with practitioners and observers resulted in reflection on program design and facilitator moves that resulted in observed outcomes. This small study alone was enough to unite librarians across the MPL system in power of assessment in their library programs and excite them about what was possible. A unifying set of measurement tools and practices for libraries across the country may very well revolutionize our practice.

If funded, this IMLS project grant would build on this rich landscape of existing research and projects to develop tools for observation and analysis, training and usage guides for librarians and libraries to draw conclusions about their programs’ outcomes, adjust practices, and share impacts with their communities. Yet the end goal is not simply to measure, it is to provide a framework for consistent cycles of observation and reflection - to improve or expand the impact of how libraries are able to support life-long learning in the development of 21st century skills in the spaces through hands-on experiential programs. By incorporating libraries and systems of libraries of diverse sizes in the initial study, the project would seek to pilot tools that are useful and adaptable to practitioners’ goals and outcomes they are seeking to measure, while also considering ease of use, feasibility of observation, and capacity for analysis. It would also start the community of practice, connecting librarians who are passionate about providing hands-on learning experiences to discuss best practices for measuring and analyzing the learning happening in their spaces and sharing with stakeholders. This project has the potential to completely change the way libraries measure the impact of their programs, which would in turn lead to better, more robust programs, stronger shared practices, and increased community buy in for library support.

Project Design:

Phase 1: Environmental Needs Scan

With many technical considerations to consider in order to create a collection of tools that will be widely accessible and sustainable to library systems of varying sizes, the first phase of the project will be to conduct an environmental scan of librarians in the field to gain a more diverse perspective on the most feasible format for the tools to be developed. The project team will seek to determine which development scenario, for instance a

web based platform vs. a digital application or downloadable software (more information in the digital product form), will be most accessible to different library partners. Each scenario comes with different limitations and the goal of this phase will be to identify which option will make the usage of the tools the most open, accessible, and sustainable.

While the Bubbler at MPL has designed an initial prototype of a data collection tool in the form of an app, the project team has recognized this need to initially backtrack in the development process, rather than simply tweak that tool, in order to consider the diversity of the field. Additionally, the small development company which partnered with the Bubbler at MPL, Rootstock Partners LLC, has dissolved in the wake of the pandemic, but developer Jonathan Broad will stay on as an advising consultant to build the development scenarios and assist with the technical components of creating the development plan.

Once the project team has created the survey for the environmental needs scan, the project's advisory board members and partners will be critical in assisting to disseminate the survey through their network of libraries actively doing hands-on, experiential programming. This survey will also lay the groundwork for initially sharing the project with the broader library community and developing strategic collaborations beyond just the project team. It will also assist later with the recruitment of additional library partners in phase 4 of the project, and starting the network of interested library partners to sustain the project beyond the grant cycle. The success of the survey will be evaluated on the number and diversity of libraries who participate and success in building consensus around the framework for the toolkit that will guide the development plan in phase 2.

Phase 2: Creation of the Development Plan

The goal of this phase will be to create the development plan for both the data collection tool and data analysis tool once a framework is determined. The project team will conduct user needs interviews with a variety of internal and external stakeholders - including facilitators and designers of programs as well as external stakeholders like children and families, community partners, and other educators.

These interviews will be able to build on the user experience and data collected from the Bubbler's prototype data collection tool and initial study. Already, the project team anticipates that this redesign will include accommodations for customizable frameworks of goals, outcomes, and observable indicators for a variety of hands-on programs beyond making including STEAM and open-ended play programs to make it useful to a broader audience of librarians with varying goals. They also anticipate needing an analysis platform that can tag, link, and connect related data to identify outcomes and impact and generate useful reports.

This phase will seek to answer:

1. What form of observational data do practitioners think is feasible and most meaningful to collect during a program?
2. What practices do libraries currently use for receiving consent to collect data, preserve patron privacy, and do not create barriers for participation in library programs?
3. What type of analysis may be most meaningful to practitioners and internal and external stakeholders?
4. What are the *absolutely necessary* aspects of the tool, what are desired additions if possible, and what are the pie in the sky wishes of the project team - knowing cost restraints may be in play?
5. Based on the development scenario, what are the needs for sustainability beyond the project grant?

Findings of stakeholder interviews will be analyzed by the project team and the development plan of the collection and analysis platform will be drafted. This development plan will be shared with the full advisory board during virtual meetings for feedback and additional input. The plan will be used to start the RFP process (if deemed needed by the City of Madison), or the recruitment of a development partner.

Phase 3: Development and Testing the Pilot

The goals of this phase are to develop and test the first iteration of the digital toolkit and establish best observational practices for use. While the development partner creates the tools, the project team will plan the first round of testing. This includes planning the programs to be observed, hiring interns to assist with the observations, and drafting the first round of user guides while consulting the advisory board members on best practices for observational practices and consent policies.

Once the first iteration of the tool is ready, the project team will conduct their field testing. Ideally, if things go as scheduled, this testing will occur over one semester (18 weeks) to align with college level intern or independent study students' academic calendars. Recruitment of these interns will be assisted by members of the advisory board and their connections to the education and information schools regionally. These students will increase the library's capacity for collecting data during programming, as well as offering valuable mentoring experiences for the intern and a thought partner for the practitioner. This practice has been particularly effective and meaningful in the Bubbler's previous observational cycles.

With MPL, SPL, and WPL in relatively close proximity, the project team is excited to work together to collect data, travelling to see each others' programs and spaces, and supporting each other with real time feedback and troubleshooting. Throughout the testing cycle, the project team will also conduct virtual visits and feedback sessions to guide their practice, as well as anticipated ongoing communication with the development partner.

This phase of the project will evaluate:

1. Can practitioners collect meaningful evidence of indicators of program outcomes during programming using the tools? How could it be more effective?
2. Does the analysis platform allow them to organize and analyze observational data in a meaningful way to make claims about program outcomes, reflect on their own practice, and share results with shareholders?
3. Do they and their stakeholders find these analyses beneficial? What would make them more so?
4. Are these tools feasible and sustainable implements to their ongoing program practice?

After the completion of the testing cycle, the project team will compile the results and reports to share with the advisory board as well as at the 2023 ALA National Conference in Chicago. Based on the project timeline, these two deadlines should align, allowing the full grant team to meet in Madison for an in-person two day summit adjacent to ALA Chicago, and allowing all members to take advantage of a shared travel cost.

The project team would also work to give advisory board members not only a demonstration, but an opportunity to test out the tools in action during library programs at one or more of the library sites, allowing the chance for more concrete and comprehensive feedback on the tools. Ideally, any conference presentation by the project team in the summer and fall of 2023 would be experiential, allowing librarians and practitioners to get their hands on the pilot tools in a realistic way. This mid-project sharing cycle will be key in recruiting interested library partners to build strategic collaborations for the second round of testing after a revision cycle.

While sharing of the pilot study is occurring and libraries are being recruited for the second round of testing, the project team will work with the development company to make any small scale revisions to the digital tools, as well as consult together to revise the user guides and develop the virtual trainings to accompany them.

Phase 4: Second Cycle of Testing

The goals of phase 4 are to test the feasibility for expansion of the tools in the broader, diverse library world. During the revision cycle and after, the team will recruit an additional 3-5 libraries of varying size and capacity,

and from a variety of diverse communities who run hands-on, experiential programs to expand the perspective on the success and usability of the tools. They will also consider where libraries are in the development of their hands-on programming practice. For libraries with established programs, this is an opportunity to refine and expand their practice, whereas for others it may be an opportunity for mentorship from the project team to really get their hands-on, experiential programming off the ground.

To incentivize additional libraries to participate, the grant will fund small programming budgets to support the programs being observed, virtual training opportunities in observational practice and program design and content, and access to the guides and tools for assessment. It will also fund one member of each partner library team to attend a conference with the project team to present on their findings and experiences.

This additional testing will seek to evaluate similar questions as outlined in phase 3, but additionally:

1. Were the trainings and user guides sufficient to support the implementation of these tools in their spaces? What would need to be added or removed?
2. Are there recommendations for accommodations to the digital tools to better fit the capacity (larger and smaller systems) of the library using them?

Each partner library will seek to test the tools in 5-10 varying library programs (more or less based on their size and capacity.) The project team will also conduct a second, smaller round of testing in their own spaces to continue to evaluate the evolving toolkits. After the testing cycle is completed, the project team will conduct virtual feedback interviews with each of the partner libraries. Based on the given feedback, the project team will conduct a final revision process on the user guides and trainings. It is unclear if there will be additional funding for a revision of the digital tools, although the team will be able to document suggestions for further revision in the sustainability plan.

Phase 5: Dissemination & Sustainability

The goals of the last phase of the project are to share the findings of the grant, but also create the plan for dissemination and sustainability of their tools. Broader dissemination of the digital tools will be based on the development scenario and necessary resources needed to sustain the tools determined in the phase 1 environmental scan. The sustainability plan will be revisited throughout the development cycle and will be a consideration in any revisions to the tool. For instance, this will include the plan for hosting, maintaining, and sharing the software, code, or data.

The project itself has been purposefully designed to create the community for sustaining the toolkit, by involving a larger network of partner libraries beyond the project team from the beginning and throughout the creation process. By the end, the project team will seek to create a sustainability plan outlining a “membership” model if necessary or something similar, and the creation of a governance structure (as those advised by the [It Takes a Village Guide](#) for open sourced software.)

The final findings of this project and tools will be shared through many channels. Including at conferences (potentially: Play, Make, Learn, the Public Library Association National Conference, Connected Learning, and the Maker Educator Convening), through publications from the Public Library Association and Maker Ed, and potentially through webinars for other libraries interested in using and investing in the tools as determined by the sustainability plan.

Key Project Staff & Collaborators

The Project Team

- Rebecca Millerjohn - youth services librarian with the Bubbler at Madison Public Library providing expertise in Maker Education and assessment practices, will serve as the project director and coordinator to oversee project activities and progress.
- Amy Holcomb - the Experiential Learning Supervisor managing the BOOMbox, a STEAM learning space, will coordinate planning observations at Skokie Public Library.
- Sue Abrahamson - children's services librarian specializing in STEAM learning, will coordinate planning observations at Waupaca Public Library.
- Carissa Christner - youth services librarian at Madison Public Library, early childhood and play expert, Anji Play coordinator, will coordinate planning and observation of play based programs at MPL.
- Holly Storck-Post - youth services librarian at Madison Public Library, early childhood and play expert, manager of the MPL Play Lab, will coordinate planning and observation of early childhood programs at MPL.
- Jacob Ineichen - web and technical services librarian at Madison Public Library, will consult on the planning of open source software development and implementation.

As well as other librarians and programming practitioners at Madison Public Library, Skokie Public Library, and Waupaca Public Library and 3-6 college level interns.

The Advisory Board

- Dr. Erica Halverson - Professor of Curriculum & Instruction focusing on learning through the arts University of Wisconsin, Madison, will advise on observational and assessment practices, and informal learning practices.
- Dr. Peter Wardrip - Assistant Professor of STEAM Education University of Wisconsin, Madison, will advise on observational practices and STEAM learning development, as well as assist with recruitment of interns or independent study students.
- Dr. Lauren Penney - Maker Ed program manager, will assist with the recruitment of library partners in phase 1 and 4 of the project, assist with dissemination and sustainability in phase 5, and will advise in making and learning and assessment practices throughout.
- Dr. Rebekah Willett - Associate Professor in the ISchool at the University of Wisconsin, Madison focusing on children's literature and play, will advise on observational and assessment practices for play and early literacy, assist with recruitment of interns or independent study students, as well as recruitment of additional library partners in phase 1 and 4 of the project.
- Sarah Sawicki - Planning and Projects Director at the Richland Library, Columbia SC. Having worked on open source digital projects (including Richland's [Library Intercept](#)) Sarah will advise on the digital product development as well as provide resources and connections to open source software resources.

Advising Consultant

- Jonathan Broad - software developer previously of Rootstock partners LLC, will be available to consult on the development and technology considerations throughout the project.

Additional Collaborators Include:

Mary Hirsh, Acting Executive Director of the Public Library Association, and Tessa Michaelson-Schmidt, head librarian at the Wisconsin Department of Public Instruction, eager to provide assistance in recruitment of and dissemination to their library networks in phase 1, 4, and 5 of the project

Diversity Plan:

The need to better measure qualitative impacts of library programming is not unique to only one size or kind of library system. Any library system, whether rural, suburban, or urban or containing one or many locations, has an obligation, but also a desire, to share their impact with their community in a meaningful way. Knowing more about their impact has implications on a library's budget, but also on a librarian's decision making, planning, and communicating with stakeholders. In addition, the ability to talk meaningfully to patrons with evidence about their learning builds confidence, fosters pride, and builds the mindset that they are "learners."

This project is designed to assess learning outcomes in programs that can be seen as peripheral or extra, as hands-on experiences in informal spaces are not usually tied directly to traditional academic success. Yet there are often spaces and opportunities where children who struggle with traditional educational measures can thrive. For many children and families, there are barriers in accessing fun, engaging, hands-on learning opportunities. These experiences provided by children's museums, community arts spaces, or even community centers require a cost to participate or access. However, programs like the Bubbler's [Making Justice](#), [Making Spaces](#), and [Media Academy](#) and spaces like Skokie's BOOMbox, Studio, and Lab, or Waupaca's outreach programming across the city seek to address the opportunity gap and inequitable access to free hands-on experiential learning - like many of their public library partners across the country.

Each of the project teams' libraries provides a unique perspective to test the effectiveness of a shared tool. Madison Public Library is an urban library system with nine locations and many staff throughout the City of Madison. However, not all of the Madison community has easy transportation access to a library location, pushing librarians to support hands-on programming at local community centers, schools, after school programs, childcare centers, local parks, and within the juvenile detention system. Its hands-on programming spans all ages, and often partners with outside teaching artists or makers to diversify its offerings. MPL's broad scope of programming brings many opportunities to explore, but also the perspective of many logistical questions to explore.

Skokie Public Library is also in an urban area, but hosts hands-on programming primarily out of their single library. Over 42 percent of Skokie residents are foreign-born, and over 70 languages are spoken in Skokie schools. Skokie is home to more low-income housing and group homes than neighboring communities. The library is the heart of a vibrant village, and is a beloved community space and resource highly utilized by all pockets of the community. SPL's reputation as a space of learning is strong, and their multilingual community offers unique perspectives in serving diverse populations.

Waupaca Public Library is in a rural area, serving the City of Waupaca, but also a broader surrounding area of 250 square miles. Transportation in this rural community is a challenge so partnering with public and private schools, the historical society, and the parks & recreation department to bring outreach programming to sites outside the library is key. A large population of the Waupaca service area lives in poverty, and library programming is often one of the few places where youth can access hands-on learning opportunities outside of school. The team at Waupaca is small but mighty and brings a wealth of experience and invaluable perspective of what will be feasible with limited capacity.

The intent of these tools is to be usable to libraries and library systems no matter their size and also in a variety of program settings. These three libraries in the core project team already bring a variety of perspectives and diverse challenges to be navigated. When recruiting additional partner libraries in phase 4, the project team will seek to even further diversify the field of testing by seeking additional libraries in rural, suburban, and one additional urban area who serve diverse and ranging populations with a variety of hands-on, experiential program offerings.

However, libraries in question are really only one half of the puzzle. The results of the data collection and analysis are only helpful if they are valuable to a variety of stakeholders including the children and families or community partner groups who participate in the programs. In the design of these tools, the project team is committed to also engaging with a diverse group of external stakeholders in their communities to ensure the benefits of these assessment tools meaningful to our patrons and partners as well.

National Impact:

In 2020, the Wisconsin Department of Public Instruction's [Worksheet for the Wisconsin Public Library Annual Report](#) requested minimal programming statistics limited only to the number of programs and attendance. These reporting measures took up only half a page of the 12 page document of necessary reported statistics from each library in the state. While there is no argument that circulation, library usage, and collection statistics as measures of impact are vitally important to the library profession, programming can occupy a large component of a librarian's capacity and budget. Hands-on experiential programs allow librarians to form meaningful relationships with children, families, and community partners, to invite patrons to set their own initiatives for learning and literacy development, and support life-long learning within their communities.

The practice of measuring outcomes and impact of these programs is not built into the culture of librarianship. Without the right tools, training, and community of collaborators, starting on the journey of authentic outcomes measurement is daunting. Yet without those measures, the ability of librarians to be reflective of their own practice and program design is challenging and the ability to tell the full story of library impact is limited, as well as justifying their budget and capacity decisions to maintain them.

With innovative, well designed digital tools to collect and analyze qualitative data efficiently, libraries will be able to assess learning outcomes in hands-on programming and share them with their diverse communities, revolutionizing the way the field is able to understand lifelong learning, and driving the library programming practice forward for greater impact. The expected benefits to the internal stakeholders include improvements to program design and facilitation practices and in-depth reporting of learning outcomes to internal stakeholders. The expected benefits to external stakeholders include pride and joy of their learning being valued, creative reflective opportunities about learning outcomes for children and caregivers, and increased understanding and value of the impacts of participating in experiential learning opportunities and further participation.

In any development scenario, the project team will work to ensure that the digital tools are available freely or at minimal operating cost to libraries who want to access them. The user guides and accompanying resources as well as webinars hosted by organizations like PLA and Maker Ed will be free and accessible to all. By sharing the results of this study through wide reaching channels like the Public Library Association, Maker Ed, and at national and regional conferences, the project team will be able to build a community of interested library partners that can access the basic toolkit, while laying the groundwork for continued governance and membership of contributing libraries to sustainably maintain, but also push further, development and innovation of these tools.

The field of librarianship is ready for this form of digital innovation. With a comprehensive project plan that ensures feedback from a diverse pool of libraries through its various stages of development - from selecting the appropriate development model and platform, to testing the digital tools in diverse spaces and creating accessible trainings and user guides for implementation, to considering sustainability and access from the beginning - the project team will work to ensure these qualitative observation and analysis tools for hands-on programming are feasible, useful, and accessible to the broadest swath of the library field, maximizing the impact for libraries and librarians in every community.

Phase 1: Environmental Needs Scan

1.1 Create Scenario Survey & Participant list

- During the time the project team will continue to research development scenarios in order to create the survey of scenarios to send to interested library partners. This list of partners will be compiled with advisory board assistance (PLA, DPI, and MakerEd)

1.2 Conduct Survey and Gather Results

- These results will drive the development structure of the plan and influence to limitations in the design phase and interviews with potential users.

1.3 Report Findings of the Survey

- This will be our first official virtual meeting between all members of the project team and the advisory board to review the findings of the survey and make initial decisions about the development plan

Phase 2: Creation of development plan

2.1 Creation of the plan and structure for stakeholder interviews

- The project team will create the list of internal and external stakeholders to interview about the design of their tool, as well as the interview questions. They will consult with Jonathan Broad (previously of Rootstock Partners) to determine a “structure” for the initial development plan so they can collect information purposefully.

2.2 Interview Cycles

- The project team will conduct interviews with internal and external stakeholders on analysis tool and report structures and compile the results of the survey findings

2.3 Draft the Development Plan (and sustainability plan)

- The project team will draft their initial development plan and share with the full group during the 2nd virtual convening of the full team and advisory board. Based on the feedback of the board, the project team will finalize the development plan that will drive the RFP process. This draft will also include the first iteration of the sustainability plan, as maintenance of the tools will need to be considered from the beginning according to needs identified in the environmental scan.

2.5 RFP/Developer Recruitment Process

- It is unclear due to legal constraints if a formal RFP process will be necessary, however, it will take time regardless to identify a developer for the digital toolkit. Creation of the development plan and recruitment process overlap as changes may be necessary.

Phase 3: Develop and test the pilot tools

3.1 Developer Creates pilot of tools

3.2 First Round of testing is planned

3.3 Version 1 of user guides is drafted

- The project team will determine the data collection and analysis trial based on the timeline for development. Ideally, this will align with the spring semester of instruction for intern recruitment. They will need to plan the programs for observations, recruit interns, and begin drafting the user guides while consulting with advisory board research partners on observational practices and review consent policies.

3.4 First Round of testing occurs

- The project team will conduct an 18 week (1 semester) observation cycle in Madison, Skokie, and Waupaca Public Library programs. The project team may visit each other’s locations to observe programming or conduct virtual meetings throughout to share issues, practices, and findings. The project team will compile the results in preparation for the full group meet up of the group.

3.5 Full Group Meet Up

- After the 1st testing cycle the full project team and advisory board will plan to meet in Madison, Wisconsin for an in person conversation, demonstration, and potential observation cycle. Site visits to Waupaca and Skokie would also be possible with their relative distance to Madison.
- If the project timeline is accurate, this will also align with the ALA Annual Conference in Chicago, where the project team will intend to share their findings and advisory board members may wish to travel for both events.
- The results of the first cycle of testing would be shared, reviewed, and priorities for revision of the tools and accompanying guides would be identified.

3.6 Revision Cycle for tools and guides

- The team would share priorities for revision with the developers and undergo revisions of their user guides and trainings.

Phase 4: 2nd Cycle of testing

4.1 Sharing of Cycle 1 findings

- If the project timeline is accurate, the sharing of the findings will occur in the Summer and Fall of 2023, allowing the team to share at several national conferences and recruit additional library partners for the 2nd round of trials, as well as publishing and sharing through PLA and MakerEd outlets and advisory board contacts

4.2 Recruitment and training of new library partners for 2nd trial

- Using the revised user guides and newly designed virtual trainings, the project team will onboard 3-5 additional library partners

4.3 Second Round of testing occurs

- New partner libraries will test the tools 5-10 programs in their spaces. The project team will also conduct additional testing with new tweaks and practices in Madison, Skokie, and Waupaca Public Library programs. Once the trials are completed the project team will conduct virtual interviews with partner libraries on the usage of the tools and effectiveness of the accompanying guides and trainings. These findings will be shared with the full team and advisory board in a virtual meet up.

4.4 Revision Cycle for the user guides

- Based on the given feedback, the project team will conduct a final revision process on the user guides and trainings. It is unclear if there will be additional funding for a revision of the digital tools, although the team will be able to document suggestions for further revision in the sustainability plan

Phase 5: Sustainability and Dissemination

5.1 Enacting the sustainability plan

- Based on the scenarios identified in phase 1 of the project, the project team will work with the developers to create a plan for broad dissemination of the digital tools and necessary resources to sustain them. This plan will be revisited throughout the development cycle and will be a consideration in any revisions to the tool. This may include the plan for hosting, maintaining, and sharing the software, code, or data. The finalized plan will determine the structure for sharing with other libraries, the creation of a “membership” model, and the creation of a governance board to guide further development.

5.2 Dissemination with national partners & Conferences

- The final findings and tools will be shared through many channels. Including at conferences, through publications from PLA and Maker Ed, and potentially through webinars for other libraries interested in using and investing in the tools as determined by the sustainability plan.

Schedule of Completion

Task	Y1												Y2												Y3																					
	2021				2022								2023				2024																													
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep									
Phase 1: Environmental Need Scan																																														
1.1: Create Scenario Survey & participant list	█																																													
1.2: Conduct Survey & Gather Results			█																																											
1.3: Report findings of Survey				█																																										
Phase 2: Creation of development plan																																														
2.1: Create plan stakeholder interviews					█																																									
2.2: Interview Cycle							█																																							
2.3: Draft Development Plan									█																																					
2.4: RFP/Developer recruitment Process											█																																			
Phase 3: Develop and 1st Cycle of testing																																														
3.1: Developer creates pilot of tools													█																																	
3.2: First round of testing is planned													█																																	
3.3: Version 1 of user guides is drafted															█																															
3.4: First round of testing occurs																	█																													
3.5: Full group meet up																									█																					
3.6: Revision Cycle for tools & guides	█																																													
Phase 4: 2nd Cycle of testing	█																																													
4.1: Sharing of Cycle 1 findings	█																																													
Wisconsin Library Association Conference	█																																													
ALA Annual Conference (Chicago)	█																																													
Play, Make, Learn Conference (tentative)	█																																													
Annual Maker Educator Conference (tentative)	█																																													
4.2: Recruitment and training of 2nd trial																									█																					
4.3: Second Round of testing occurs																													█																	
4.4: Revision cycle for guides and trainings																																	█													
Phase 5: Sustainability & Dissemination	█																																													
5.1 Drafting of sustainability plan													█																																	
5.2 Dissemination	█																																													
Wisconsin Library Association Conference	█																																													
Public Library Association Annual Conference	█																																													
ALA Annual Conference (San Diego)	█																																													



DIGITAL PRODUCT FORM

INTRODUCTION

The Institute of Museum and Library Services (IMLS) is committed to expanding public access to digital products that are created using federal funds. This includes (1) digitized and born-digital content, resources, or assets; (2) software; and (3) research data (see below for more specific examples). Excluded are preliminary analyses, drafts of papers, plans for future research, peer-review assessments, and communications with colleagues.

The digital products you create with IMLS funding require effective stewardship to protect and enhance their value, and they should be freely and readily available for use and reuse by libraries, archives, museums, and the public. Because technology is dynamic and because we do not want to inhibit innovation, we do not want to prescribe set standards and practices that could become quickly outdated. Instead, we ask that you answer questions that address specific aspects of creating and managing digital products. Like all components of your IMLS application, your answers will be used by IMLS staff and by expert peer reviewers to evaluate your application, and they will be important in determining whether your project will be funded.

INSTRUCTIONS

If you propose to create digital products in the course of your IMLS-funded project, you must first provide answers to the questions in **SECTION I: INTELLECTUAL PROPERTY RIGHTS AND PERMISSIONS**. Then consider which of the following types of digital products you will create in your project, and complete each section of the form that is applicable.

SECTION II: DIGITAL CONTENT, RESOURCES, OR ASSETS

Complete this section if your project will create digital content, resources, or assets. These include both digitized and born-digital products created by individuals, project teams, or through community gatherings during your project. Examples include, but are not limited to, still images, audio files, moving images, microfilm, object inventories, object catalogs, artworks, books, posters, curricula, field books, maps, notebooks, scientific labels, metadata schema, charts, tables, drawings, workflows, and teacher toolkits. Your project may involve making these materials available through public or access-controlled websites, kiosks, or live or recorded programs.

SECTION III: SOFTWARE

Complete this section if your project will create software, including any source code, algorithms, applications, and digital tools plus the accompanying documentation created by you during your project.

SECTION IV: RESEARCH DATA

Complete this section if your project will create research data, including recorded factual information and supporting documentation, commonly accepted as relevant to validating research findings and to supporting scholarly publications.

SECTION I: INTELLECTUAL PROPERTY RIGHTS AND PERMISSIONS

A.1 We expect applicants seeking federal funds for developing or creating digital products to release these files under open-source licenses to maximize access and promote reuse. What will be the intellectual property status of the digital products (i.e., digital content, resources, or assets; software; research data) you intend to create? What ownership rights will your organization assert over the files you intend to create, and what conditions will you impose on their access and use? Who will hold the copyright(s)? Explain and justify your licensing selections. Identify and explain the license under which you will release the files (e.g., a non-restrictive license such as BSD, GNU, MIT, Creative Commons licenses; RightsStatements.org statements). Explain and justify any prohibitive terms or conditions of use or access, and detail how you will notify potential users about relevant terms and conditions.

A.2 What ownership rights will your organization assert over the new digital products and what conditions will you impose on access and use? Explain and justify any terms of access and conditions of use and detail how you will notify potential users about relevant terms or conditions.

A.3 If you will create any products that may involve privacy concerns, require obtaining permissions or rights, or raise any cultural sensitivities, describe the issues and how you plan to address them.

SECTION II: DIGITAL CONTENT, RESOURCES, OR ASSETS

A.1 Describe the digital content, resources, or assets you will create or collect, the quantities of each type, and the format(s) you will use.

A.2 List the equipment, software, and supplies that you will use to create the digital content, resources, or assets, or the name of the service provider that will perform the work.

A.3 List all the digital file formats (e.g., XML, TIFF, MPEG, OBJ, DOC, PDF) you plan to use. If digitizing content, describe the quality standards (e.g., resolution, sampling rate, pixel dimensions) you will use for the files you will create.

Workflow and Asset Maintenance/Preservation

B.1 Describe your quality control plan. How will you monitor and evaluate your workflow and products?

B.2 Describe your plan for preserving and maintaining digital assets during and after the award period. Your plan should address storage systems, shared repositories, technical documentation, migration planning, and commitment of organizational funding for these purposes. Please note: You may charge the federal award before closeout for the costs of publication or sharing of research results if the costs are not incurred during the period of performance of the federal award (see 2 C.F.R. § 200.461).

Metadata

C.1 Describe how you will produce any and all technical, descriptive, administrative, or preservation metadata or linked data. Specify which standards or data models you will use for the metadata structure (e.g., RDF, BIBFRAME, Dublin Core, Encoded Archival Description, PBCore, PREMIS) and metadata content (e.g., thesauri).

C.2 Explain your strategy for preserving and maintaining metadata created or collected during and after the award period of performance.

C.3 Explain what metadata sharing and/or other strategies you will use to facilitate widespread discovery and use of the digital content, resources, or assets created during your project (e.g., an API [Application Programming Interface], contributions to a digital platform, or other ways you might enable batch queries and retrieval of metadata).

Access and Use

D.1 Describe how you will make the digital content, resources, or assets available to the public. Include details such as the delivery strategy (e.g., openly available online, available to specified audiences) and underlying hardware/software platforms and infrastructure (e.g., specific digital repository software or leased services, accessibility via standard web browsers, requirements for special software tools in order to use the content, delivery enabled by IIIF specifications).

D.2. Provide the name(s) and URL(s) (Universal Resource Locator), DOI (Digital Object Identifier), or other persistent identifier for any examples of previous digital content, resources, or assets your organization has created.

SECTION III: SOFTWARE

General Information

A.1 Describe the software you intend to create, including a summary of the major functions it will perform and the intended primary audience(s) it will serve.

A.2 List other existing software that wholly or partially performs the same or similar functions, and explain how the software you intend to create is different, and justify why those differences are significant and necessary.

Technical Information

B.1 List the programming languages, platforms, frameworks, software, or other applications you will use to create your software and explain why you chose them.

B.2 Describe how the software you intend to create will extend or interoperate with relevant existing software.

B.3 Describe any underlying additional software or system dependencies necessary to run the software you intend to create.

B.4 Describe the processes you will use for development, documentation, and for maintaining and updating documentation for users of the software.

B.5 Provide the name(s), URL(s), and/or code repository locations for examples of any previous software your organization has created.

Access and Use

C.1 Describe how you will make the software and source code available to the public and/or its intended users.

C.2 Identify where you will deposit the source code for the software you intend to develop:

Name of publicly accessible source code repository:

URL:

SECTION IV: RESEARCH DATA

As part of the federal government's commitment to increase access to federally funded research data, Section IV represents the Data Management Plan (DMP) for research proposals and should reflect data management, dissemination, and preservation best practices in the applicant's area of research appropriate to the data that the project will generate.

A.1 Identify the type(s) of data you plan to collect or generate, and the purpose or intended use(s) to which you expect them to be put. Describe the method(s) you will use, the proposed scope and scale, and the approximate dates or intervals at which you will collect or generate data.

A.2 Does the proposed data collection or research activity require approval by any internal review panel or institutional review board (IRB)? If so, has the proposed research activity been approved? If not, what is your plan for securing approval?

A.3 Will you collect any sensitive information? This may include personally identifiable information (PII), confidential information (e.g., trade secrets), or proprietary information. If so, detail the specific steps you will take to protect the information while you prepare it for public release (e.g., anonymizing individual identifiers, data aggregation). If the data will not be released publicly, explain why the data cannot be shared due to the protection of privacy, confidentiality, security, intellectual property, and other rights or requirements.

A.4 What technical (hardware and/or software) requirements or dependencies would be necessary for understanding retrieving, displaying, processing, or otherwise reusing the data?

A.5 What documentation (e.g., consent agreements, data documentation, codebooks, metadata, and analytical and procedural information) will you capture or create along with the data? Where will the documentation be stored and in what format(s)? How will you permanently associate and manage the documentation with the data it describes to enable future reuse?

A.6 What is your plan for managing, disseminating, and preserving data after the completion of the award-funded project?

A.7 Identify where you will deposit the data:

Name of repository:

URL:

A.8 When and how frequently will you review this data management plan? How will the implementation be monitored?