Project SHIELD: Supporting Healthy Infant Early Learning and Development

Abstract: Kent State University's (KSU) School of Information, in partnership with KSU's College of Nursing, is applying for a one-year NLG Planning Grant of $99,919, in the Community Catalysts category, that will take place from August 2021 to July 2022. The goal of the grant is to conduct a pilot study to explore ways that public library practitioners can partner with community health practitioners (CHP)[1] to provide support for families with children, ages 0-24 months, from underserved communities in the area of early brain development, learning, and health. Our overarching research question guiding the study is, *How can library practitioners partner with CHPs to support families with children, ages 0-24 months, in underserved communities with early brain development, learning, and health?* To answer this, and other sub-questions, the research will occur in two phases that include surveys, interviews, focus groups, and participatory design workshops. Phase 1 of the pilot study will include a library and CHP participant group from across the United States and a family participant group from Ohio. Phase 2 will consist of Ohio-based library and CHP participant groups. This planning grant is expected to generate preliminary findings on the barriers, challenges, and needs that families in underserved groups experience with early brain development, learning, and health along with data on how libraries currently support families with children, ages 0-24 months, and the role CHPs play in these efforts. In addition, the data will also inform a plan for a larger project grant that will establish on a national level how libraries can partner with CHPs to be catalysts for supporting learning and health for the youngest members of their communities.

1. STATEMENT OF NATIONAL NEED

In the U.S., 52% of low-income and 25% of middle-income children enter school lacking the skills necessary to learn and be successful within formal education, which can impact their success with lifelong learning (Isaacs, 2012). Many scholars point to early education as a way to address these school readiness gaps (Heckman 2011), but while many early education efforts focus on the preschool years, brain research has demonstrated that the first couple of years of a child's life are the period with the greatest brain development (Center on Developing Child, n.d.). As a result, these early years are a critical time for building nurturing parent-child relationships, supporting healthy brain development, and establishing the foundation children will need for success in academic and lifelong learning (Kuhl et al., 2019). Some parents and caregivers have the resources and understand how to support their young child's learning and development during these first few years of life, but many do not, which can lead to wide disparities for young children in terms of brain development, learning, and health that can continue throughout life (Neuman and Celano, 2012; Robinson et al., 2017). Given that training parents and caregivers has been shown to have a positive impact on children's early brain development and early literacy progress (Ferjan Ramírez, Lytle, & Kuhl, 2020), it is possible that these disparities could be resolved through targeted parental education.

These disparities in levels of support that parents and caregivers can provide for their young children often exist along socioeconomic and educational attainment lines, with families who have low-income and lower education levels typically offering less support for their children than those with higher-income and education levels (Heckman, 2011; Neuman and Celano, 2012). In fact, Neuman and Celano (2012) uncovered a "knowledge gap" when studying the effect of equalizing literacy and information resources across two Philadelphia neighborhoods, one more affluent and one low-income. They found that parents from the affluent neighborhood offered active, engaged support for their young children, while parents from the low-income neighborhood "appeared to support their young children's independent explorations" (pg. 123), possibly because they did not feel equipped to support their children's learning. Furthermore, disparities in early childhood health for children in low-income communities and children of color have been widely documented, with children in low-income communities and those of color having poorer health outcomes than those of their Caucasian peers in higher-income communities (Hilliemeier et al. 2013; Mistry et al. 2012).

---

[1] For this proposal, we use 'community health practitioner' to refer to healthcare professionals who work closely with different groups in their community, including nurses and community health workers.

Due to the lack of widespread systems that address early childhood learning and health, these knowledge and health gaps have become persistent in underserved communities (Heckman, 2011; Mistry et al. 2012). In addition, given that in the U.S. 23% of children under three live in poverty, 45% live with low-income families, and almost 50% of the low-income families and 60% of families in poverty are led by caregivers with only a high school degree or less (Jiang, Granja, & Koball, 2017); it is likely that these gaps will continue to persist. In addition, these gaps have only been exacerbated by the pandemic. To address these disparities in early learning, development, and health and close these knowledge and health gaps; both early childhood and health scholars stress the importance of increasing the capacity of parents/caregivers in underserved communities to support early brain development, learning, and health for their young children from day one (Heckman, 2011; Neuman and Celano, 2012; Mistry et al. 2012). Targeted parental education that focuses on early learning, health, and brain development is one way that these disparities could be addressed. In fact, recent research has found that complex scientific data on early brain development can be simplified and demonstrated to parents to help them understand the importance of and how to support brain development (Ferjan Ramírez, Lytle, & Kuhl, 2020).

Public libraries, known for their ability to serve as an equitable community resource for all, hold the potential to bridge "knowledge gaps" for underserved families with children, 0-24 months, by providing targeted support for the parents and caregivers. They are well-equipped to do this through their strengths in supporting family engagement and early learning. Research by the Public Library Association (PLA) and the Global Family Research Project found that libraries are vital organizations for engaging families with young children (Lopez, Caspe, & Simpson, 2017). In addition, research has also revealed that library storytimes support a variety of early learning concepts and skills, including early literacy (Campana et al., 2016; Cahill, Joo, & Campana 2018), early math skills (Campana, 2020), fine and gross motor skills (Campana, 2018), and social skills (McKechnie, 2006; Williams, 1998). As a part of these existing early learning and family engagement services, libraries are positioned to offer programs and services that help parents and caregivers support early literacy, learning, and healthy brain development for their children, 0-24 months. However, there is a lack of research that provides insight into how they are supporting families during these early years.

Libraries, Healthcare Organizations, Literacy, and Health: Building on their early learning expertise, libraries have recognized that, with their free programs and services for children and families, they can play an important role in supporting early learning for young children and their families in underserved communities (Campana, Mills, & Martin, 2019). However, these families often face many barriers with taking advantage of in-library programs and services. To overcome these barriers, many libraries have been partnering with community organizations to take their programs and services for children and families out into community locations to meet families where they are (Mills, Campana, & Martin, 2020). Local healthcare organizations, and other community organizations that offer healthcare-related services for families with young children, might provide effective opportunities for libraries to meet families that may otherwise experience barriers to accessing library services. By incorporating healthcare organizations into their community partnerships, it is possible that libraries could increase their reach and support of a greater number and more diverse range of underserved communities.

While libraries are not widely known for services specifically related to early childhood health and brain development, they have begun to focus on supporting general health for their broader communities, especially those that are underserved (Philbin et al., 2019; Malachowski, 2014), through programs and services like placing a nurse in library branches (Monaghan, 2016), and hosting health fairs and screenings, and vaccine clinics (Malachowski, 2014). In addition, practitioner and research literature reveals that a few libraries have partnered with healthcare organizations and professionals to support early learning for their communities. While individual library efforts have taken on a few different forms—including storytimes in hospitals and WIC centers (Powe, 2007; Connor, 2018), early literacy resources and book distributions in healthcare centers (Connor, 2018; Peifer & Perez, 2011), and partnering with home-visiting nurses to provide an early learning program for the families they visit (Pugh & Doyle, 2019)—others have been centered around partnering with Reach Out and Read (ROR), the healthcare field's best-known early literacy initiative. ROR incorporates books

and reading into pediatrician offices through children's well-child visits that occur from 6 months to 5 years of age. As a part of ROR, families are given books and guidance on promoting reading and early literacy for their young children during these well-child visits (Atkinson et al., 2002). Some libraries have supported the ROR initiatives in their communities by training pediatric clinic staff and modeling effective early literacy practices in the pediatrician waiting rooms (Madison Public Library, 2019). However, even though ROR, funded by IMLS, explored and produced a toolkit on how their ROR sites could collaborate with libraries to have a collective impact on the lives of young children (Shearman, 2015), there is still limited literature that demonstrates the widespread development of library/healthcare partnerships around ROR, as well as other library/healthcare partnerships focused on supporting families with children, 0-24 months, and how, if at all, early brain development, learning, and health fit into these efforts. This planning project aims to begin to fill this gap by accomplishing the following:

1. addressing the relative lack of library/healthcare partnerships for supporting families with young children by providing initial information to help libraries initiate or expand healthcare partnerships to reach and serve families with children, 0-24 months, in underserved communities;

2. adding to the research literature on library services for families with very young children, library/healthcare partnerships for supporting families, and the needs of families in underserved communities; and

3. informing a work plan for a larger grant proposal to establish replicable models, effective practices, and recommendations for a large-scale implementation of library/CHP partnerships to support early brain development, learning, and health for these families.

Purpose and Context of the Research: Based on the research above, it is apparent that there is a need to increase the capacity of parents and caregivers in underserved communities to more effectively support brain development, learning, and health for their children in the first two years of life. While ROR provides an important first step in these efforts, there are some limitations to the initiative. Because it starts at the 6-month well-child visit, parents and caregivers may lack crucial information on supporting learning and health for their children during the first 6 months. In addition, because it only occurs during well-child visits, there are large gaps of time where parents and caregivers are not getting information. Providing more consistent, regular access to information on early childhood during the three to six-month gaps between well-child visits, could lead to a greater increase in parents and caregivers' capacity to support early brain development, learning, and health for their children. Given that libraries are well-equipped to support early learning and family engagement, they could play a role in providing equitable, consistent access to information and support in early learning, brain development, and health for families in underserved communities.

This planning project aims to position libraries in this role by providing insight into ways that libraries can be more actively involved in increasing the capacity of parents and caregivers in underserved communities to support early brain development, learning, and health for their children, 0-24 months. Additionally, since libraries are often able to better reach and serve underserved communities through strong partnerships with agencies who serve these populations; partnering libraries with CHPs who serve these families can amplify libraries' reach and abilities with supporting early brain development, learning, and health. However, before exploring replicable models, effective practices, and recommendations for a large-scale implementation of these partnerships, more information is needed about 1) how libraries are currently partnering with CHPs to support families with young children, 0-24 months; 2) what these families feel they need in terms of support; and 3) how libraries and CHPs feel they can effectively collaborate to help meet these needs.

The main purpose of this proposed research is to explore how library practitioners and CHPs can work together to reach and support families with children, 0-24 months, in underserved communities with the ultimate goal of informing a plan for a future project grant to establish replicable models, effective practices, and recommendations for a large-scale implementation of library/CHP partnerships to support early brain development, learning, and health for these families. To inform the plan for a future grant and ensure that it is relevant and feasible, the project will also explore the barriers and challenges that families, libraries, and CHPs, face with supporting early brain development, learning, and health.

Relevance to community catalysts: By exploring how library/CHP partnerships can support early brain development, learning, and health for families with children, ages 0-24 months, in underserved communities, this project will support the Community Catalysts category through exploring *how libraries can create, develop, implement, and sustain collective impact approaches in communities*. In addition, by bringing library practitioners and CHPs together in participatory design workshops, this project will *enhance methods for collaboration between libraries and stakeholders to address community needs* and will allow library practitioners and CHPs to work together to *develop and implement programs, services, and partnership models focused on enhancing opportunities and well-being in communities*. Finally, by partnering researchers and practitioners throughout the project, but especially in phase 2, this project will focus on *exploring widespread community challenges and opportunities for growth and collaboration that are informed by or build on current library practice and feature mutually beneficial relationships between researchers and practitioners.*

2. PROJECT DESIGN

Performance Goals and Outcomes: The purpose of this project is to provide preliminary insight into how library practitioners can partner with CHPs in their communities to support parents and caregivers during the first two years of their child's life and increase their knowledge of early brain development, learning, and health for children, ages 0-24 months. To address this overall purpose, the proposed project has three main goals, which are described below along with the anticipated outcome(s) for each goal.

Goal One: Gain an understanding of how libraries are currently supporting parents and caregivers' needs around early brain development, learning, and health during the first two years of their children's lives, and how, if at all, healthcare organizations and professionals fit into these efforts.

>*Outcome One:* Publications and presentations that provide insight into how libraries are supporting families with children, ages 0-24 months, with early brain development, learning, and health, and how healthcare organizations and professionals fit into these efforts. Recommendations as to how other libraries can replicate these efforts will be included in these publications and presentations.

Goal Two: Gain an understanding of the barriers and challenges faced by families in underserved communities with being able to effectively support early brain development, learning, and health during the first two years of their children's lives.

>*Outcome Two:* Publications and presentations that provide insight into these barriers and challenges for families with regards to early brain development, learning, and health during the first two years of life.

Goal Three: Gain an understanding of how library practitioners can partner with CHPs to work together and support parents and caregivers with early brain development, learning, and health during the first two years of their children's lives.

>*Outcome Three:* A roadmap for the library field on supporting families with children, ages 0-24 months, from underserved communities with early brain development, learning, and health. The roadmap will share what we learn in the grant with regards to 1) the needs, barriers, and challenges that families with young children, ages 0-24 months, from underserved communities experience with supporting early brain development, learning, and health; and 2) how libraries can partner with CHPs to support these families with children, ages 0-24 months, from underserved communities. Our goal with the roadmap is to share the findings with libraries and library practitioners nationwide to help them understand the needs of families with very young children and identify some initial ways they can partner with CHPs to support these families in their own community.

>*Outcome Four:* A preliminary work plan for a future project grant that is focused on establishing replicable models, effective practices, and recommendations for library/CHP partnerships that support families with children, ages 0-24 months, in underserved communities.

Research Questions: The study will be guided by the overarching question of *'How can library practitioners partner with CHPs to support families with children, ages 0-24 months, in underserved communities with early brain development, learning, and health?'*. The overarching question will be answered through the following sub-questions:

RQ1: How are libraries currently supporting families of children, 0-24 months, with early brain development, learning, and health? How, if at all, do CHPs fit into these efforts?

RQ2: What barriers and challenges do families in underserved communities face with being able to support early brain development, learning, and health during the first two years of their children's lives?

RQ3: How, if at all, can library/CHP collaborations be designed to overcome these barriers and support these families?

Project Activities: To achieve these goals, the project includes two phases that are detailed below.
Phase 1: Data Gathering

Phase	Activity	Participants	Purpose	Timeframe
1	Surveys, interviews, & focus groups	*Library practitioners and CHPs nationwide that work with children, ages 0-24 months, and their families. *Families with children, ages 0-24 months, from underserved groups in Ohio.	To provide a broad and deep understanding of 1) how library practitioners and CHPs are supporting families with children ages 0-24 months, 2) their perceptions of the families' needs during those first two years, and 3) the barriers, challenges, and needs families in underserved groups experience with early brain development, learning, and health.	August 2021 - March 2022

Activity Details: In Phase 1, online surveys will be administered to library practitioners and CHPs nationwide who are working with families of children, ages 0-24 months, to gain a broad understanding of how they are supporting parents and caregivers' needs around early brain development, learning, and health during the first two years of their children's lives. The surveys will include a variety of questions on how they are reaching and serving these families; their perceptions of the families' needs and the barriers and challenges these families face; and what barriers and challenges they themselves face with effectively supporting parents and caregivers with early brain development, learning, and health. Following the surveys, the research team will conduct virtual interviews with library practitioners and CHPs nationwide to gain a deeper understanding of the data that emerges in the survey around 1) how they are reaching and serving these families, 2) their perceptions of the barriers and challenges these families face, and 3) what knowledge and resources they feel they need to effectively support parents and caregivers with early brain development, learning, and health.

To understand the needs of the families and the barriers and challenges that they face, we will also conduct several focus groups with families of young children, ages 0-24 months, from underserved communities that represent both racial and socioeconomic diversity. Each family will be asked to participate in one focus group. These focus groups will explore the barriers, challenges, and needs families in underserved groups experience with early brain development, learning, and health, along with how these families view early brain development, learning, and health and how they engage with their child and community resources to support these aspects. It is likely that these focus groups will uncover some information on these families' needs that fall outside of the scope of what a library/CHP partnership can accomplish. If this occurs, we plan to call attention to these needs by 1) providing an anonymized, group-level summary of the data shared to the community organization that is working with them, and 2) developing publications and presentations on these

needs to highlight that they exist. By doing this, our hope is that other community organizations will be able to step in and address these needs that fall outside of a library/CHP partnership.

Participants and Recruitment: We will recruit library practitioners and CHPs, from across the United States, who are working with and supporting families with children ages 0-24 months to participate in the surveys that are targeted for their field, with the goal of recruiting as many as possible. To reach library practitioners, we will send out announcements through national library association listservs, state library listservs, and library-focused social media groups, with the goal of recruiting a diverse group of participants that represent small, medium, and large; urban, suburban, and rural communities as well as ethnically and culturally diverse service populations. To reach CHPs, we will send out the announcement through national nursing and healthcare associations, such as the American Nursing Association, and nursing- and healthcare-focused listservs and social media groups. We will use the survey to recruit participants for the interviews as well as reaching out directly to practitioners who have been identified as being engaged in innovative efforts in this area. Our goal is to conduct fifteen interviews with each practitioner group (library and CHP) for a total of thirty interviews. To recruit families of children, ages 0-24 months, from underserved communities for the focus groups, we will work with community organizations that have existing relationships with these families, including [Birthing Beautiful Communities,](#) [CenteringParenting Program](#), [Akron Metropolitan Housing Authority](#), and more. These organizations will help connect us with the families who are willing to participate in the focus groups. Our goal is to recruit forty families total across several focus groups. To increase participation, we will offer gift card incentives to those who participate in the interviews and focus groups.

Analysis: The survey analysis will be done using descriptive and inferential statistics and inductive thematic coding of open-ended questions. Interview and focus group analysis will be done using inductive thematic analysis and content analysis of the transcripts.

Relationship to Research Questions and Goals and Outcomes: The surveys, interviews, and focus groups will help to answer RQ1 and RQ2. In addition, the surveys, interviews, and focus groups will provide insight into Goals 1 and 2 through data that can be used in publications and presentations on how libraries are supporting families with children, ages 0-24 months, from underserved communities and the needs, barriers, and challenges these families experience with supporting early brain development, learning, and health, helping the project to achieve Outcomes 1 and 2. Finally, the data that emerges from the surveys, interviews, and focus groups will help to achieve Outcome 3 & 4 by informing the content in the roadmap and the work plan.

Phase 2: Brainstorming and Designing

Phase	Activity	Participants	Purpose	Timeframe
2	2 Participatory design workshops	40 library practitioners and CHPs from across Ohio that are working with children, 0-24 months, and their families.	To bring together library practitioners and CHPs from Ohio to brainstorm and design ways that they can work together to support families with children, 0-24 months, in underserved communities.	April – May 2022

Activity Details: Phase 2 consists of two half-day participatory design workshops for 40 Ohio-based library practitioners and CHPs (20 in each workshop) to allow them to brainstorm and design ways to partner effectively to support families of young children in underserved communities with early brain development, learning, and health. While Phase 1 focuses on efforts occurring nationally, Phase 2 will be done with Ohio-based library practitioners and CHPs due to limited travel funds. The workshop will be held at Kent State University, centrally located in Ohio, and will include a variety of design activities created and led by the

research team and MLIS and nursing student volunteers to help surface different ways that library practitioners and CHPs can work together. While a few design activities will focus on revealing ways they can work together to serve all families with children, ages 0-24 months, most will narrow in on how they can support families with children, ages 0-24 months, in underserved communities.

Participants and Recruitment: For the participatory design workshops, we will recruit library practitioners and CHPs from those who participated in the surveys and interviews in Phase 1. We will also reach out directly to other library and CHP practitioners who have been identified, through contacts the research team has in both fields, as being engaged in innovative efforts in this area. Our goal is to recruit 40 participants for the workshops: 20 library practitioners and 20 CHPs. We will be intentional about trying to recruit a diverse mixture of participants, including those who represent diverse backgrounds; those from urban, suburban, and rural areas; and those who work with underserved populations. To increase participation, we will offer gift card incentives and travel funds for those who participate in the workshop.

Evaluation: A survey will be conducted at the end of the workshop to understand participants' experiences and provide insight into collaboration across the library and healthcare fields. The survey will include multiple-choice and open-ended questions as well as the IMLS performance measurement statements.

Analysis: The workshops will be recorded, and inductive thematic analysis will be done of the transcripts. Content analysis will be done of the design artifacts. The survey analysis will be done using descriptive and inferential statistics and inductive thematic coding of open-ended questions.

Relationship to Research Questions and Project Goals and Outcomes: The workshops will help to answer RQ3 and may also offer data related to RQ1 and RQ2. The workshops will also provide insight into Goal 3 through data that reveals ways that libraries can partner with healthcare organizations and CHPs to support parents and caregivers with early brain development, learning, and health during the first two years of their children's lives. The workshop data will help the project achieve both Outcomes 3 and 4 by informing the roadmap for the field (Outcome 3) and the preliminary work plan for a future project grant that is focused on establishing replicable models, effective practices, and recommendations for library/CHP partnerships that support families with children, ages 0-24 months, in underserved communities (Outcome 4). We will offset the state-level nature of the Phase 2 data by 1) combining it with national-level data from Phase 1 to inform the work plan (Outcome 4) and the roadmap (Outcome 3), and 2) having drafts of both the work plan and roadmap reviewed by a national group of library and CHPs in order to incorporate more national-level insight.

Contingency plans for potential risks: While this project is relatively low risk, there are certain potential risks inherent in our current environment that could impact the project. **The COVID19 pandemic** and social distancing has created several challenges with doing research. This project is intentionally designed with the in-person research activities—focus groups with families and participatory design workshops—occurring in the first half of 2022 with the hopes that social distancing will have ended at that time. The methods that occur at the beginning of the project are all virtual and should be able to proceed as planned regardless of social distancing guidelines. If social distancing is still in place throughout the full grant period, we have developed a few different alternate plans that we can use to fully complete the grant activities, such as offering virtual focus groups and virtual participatory design workshops (see Supportingdoc4 for more details). The PI of this proposed grant, through her current IMLS grant (Project VOICE) and a number of other research projects, has gained extensive experience with transitioning in-person research activities to virtual research activities during the pandemic, including interviews, focus groups, and participatory design workshops. **Recruiting families,** especially those from underserved communities, to participate is another challenge the project could encounter. Recruiting families, especially those in underserved communities, to participate in research can sometimes be challenging, but the circumstances during the pandemic will likely make it even more difficult. Because of this,

we have developed relationships with several community organizations that work with families of young children in underserved communities to help us connect with and build trust with these families. In addition, we anticipate that the gift card incentives will help to boost our recruiting with families.

Evaluation of the project: Due to the planning nature of this project, we plan to conduct the overall evaluation of the project through a variety of internal and external methods. The central part of the overall evaluation will be based on the attainment of the four outcomes identified above. To inform our success with these outcomes and lay a foundation for the overall evaluation, we have built evaluation measures into Phase 2 (Brainstorming and Designing) of the grant because it focuses in on working with the participants to explore the collaboration between library practitioners and CHPs. The library/CHP participatory design workshop in Phase 2 will be evaluated through a survey of participants to understand their experiences and provide insight into collaboration across the library and CHP fields. While the survey will provide insight into the effectiveness of the workshop, it will also provide data that will contribute to the overall evaluation of the project and success with all four outcomes. In addition, as a part of the evaluation, the roadmap and the preliminary work plan will be reviewed by a national group of library practitioners and CHPs as well as the advisory board. They will be asked to provide feedback on the content and thoroughness of the roadmap and the work plan's applicability and feasibility. Finally, throughout the project, the advisory board will contribute to our evaluation by providing feedback on all research activities at periodic meetings and through a final feedback session at the end of the project. All of these data sources will be used to provide insight into the overall effectiveness of the project and the success with each outcome. At the end of the project, the data from all of these sources will be pulled together into a final report that provides an evaluation of our project goals, research activities, and outcomes.

Personnel: The Project SHIELD team includes specific talents: 1) **Dr. Kathleen Campana**, *Principal Investigator*, is an Assistant Professor at Kent State University. She will oversee and be involved in all aspects of the project. Campana brings considerable research experience with young children, families, libraries, and other community organizations to this study. She has studied various aspects of library storytimes and recently explored how robust library-preschool partnerships can support family engagement, especially for preschools who serve children and families in underserved communities. Currently, Campana is the Principal Investigator on Project VOICE, an IMLS grant developing a social justice planning and assessment toolkit for library-staff who want to better support young children and families from underserved communities. In addition, Campana has also assisted with the design, management, and research in previous IMLS grants, including Project LOCAL--which explored how libraries are supporting families in underserved communities; and Project VIEWS2— which explored the early literacy impact of library storytimes. She has also written widely on early literacy and learning, family engagement, and library services for young children and families. 2) **Elaine Thomas**, *Co-PI*, MSN, RN, CNE, is a Senior Lecturer with Kent State University's College of Nursing and is course coordinator for Health Care of Children. In addition to helping with all aspects of the grant, she will lead the recruitment of CHPs in Phases 1 & 2. Thomas is a pediatric expert with over 36 years of pediatric experience. She is responsible for coordinating all aspects of the pediatric course for over 250 students and 20 faculty every year. 3) **Michelle Baldini**, *Co-PI*, MLS, is the Director of the Reinberger Children's Library Center (RCLC) at KSU School of Information. She will assist with all aspects of the project. Baldini directs, plans, manages and administers the operations, services and outreach programs of RCLC. Baldini has managed, coordinated and assisted with project models of 8 large federally funded grants, totaling over 2million dollars. She directs and collaborates with advisory boards and faculty to provide platforms, such as symposia, conferences and forums, to share research, policy development, and field-related information related to children's services in libraries, PreK-12 schools and community agencies. In addition, Baldini heightens the visibility of the RCLC by publishing on its collection in practitioner/research journals, FaceBook, Reinberger Blog and various social media platforms.

We also plan to recruit **MLIS and Nursing students** to help with the project. The MLIS students will be recruited by Campana (PI) and the nursing students will be recruited by Thomas (co-PI). One MLIS student

from the youth services track will be funded by the grant to serve as project manager and assist with the research. Other MLIS and Nursing students will be recruited to volunteer (as a professional development opportunity) to help run the participatory design workshops with the goal of having them learn ways that they can partner with each other as they move into their future careers. We also plan to recruit **library practitioners and CHPs** to review the roadmap and the work plan. The project will also be advised by a **Strategic Advisory Board** which includes individuals representing the library and healthcare fields (see the table below and Supportingdoc3 for more information).

Name	Organization	Expertise/Relationship to the project
Dr. Betsy Diamant-Cohen	Mother Goose on the Loose	Library services for families with children, ages 0-3
Dr. Michael Lehman	Brain Health Research Institute, Kent State University	Brain development
Kay Nees	Ohio Department of Health	Supporting families of infants with health
Dr. Jennifer Savitski	Cleveland Clinic: ObGyn & CenteringParenting	Healthcare and parenting support for families from underserved groups with young children
Emily Sedgwick	National Center for Families Learning	Family engagement and libraries
Jill Spillman	Akron Metropolitan Housing Authority	Supporting families from underserved groups
Heather Wuensch	Akron Children's Hospital	Reach Out and Read

The advisory board's role will consist of 1) attending virtual 1-hour meetings on a quarterly basis where they will provide feedback and guidance on project activities and project content and resources, and 2) reviewing the roadmap for the field and the preliminary work plan for a future grant. In exchange for their time and effort, the advisory board members will be given a small stipend.

3. DIVERSITY PLAN
There is a strong foundation of diversity and inclusion present throughout all aspects of this project. Diversity is ultimately at the center of our project given its focus on using library/CHP partnerships to better support families with young children, ages 0-24 months, from underserved communities. Because of our focus on families from underserved communities, we plan to recruit families from underserved groups for the focus groups that represent a variety of racial, ethnic, and socioeconomic backgrounds during Phase 1 (see the recruitment plans in the project design for more information). Additionally, throughout Phase 1 and Phase 2, we will recruit library and CHP participants who serve diverse communities including rural, lower socioeconomic, and minority populations; as well as intentionally focusing on library and CHP participants who are diverse themselves (see the recruitment plans in the project design for more information). We have also chosen our methods to support and uphold diversity and inclusivity. Throughout the research process we will use qualitative methods for data collection and analysis so that we can account for cultural influences in the data. Additionally, we plan to incorporate activities in the participatory design workshops (Phase 2) that encourage inclusive, equity- and strengths-based approaches to ensure that 1) the participants play an active part in defining the needs and opportunities related to this project and 2) we are working towards a library/CHP collaborative model that is beneficial and sustainable for both fields as well as for the families at the heart of these efforts. We plan on working closely with participating CHPs and KSU nursing faculty to ensure HIPAA compliance in any workshops, interviews, or other project-related data collection. Additionally, we will anonymize data sets to protect identities and any sensitive information we may gather. All of these efforts to place diversity throughout our project helps to ensure that the developed roadmap and our findings provide meaningful and relevant support to libraries and the communities they serve, enabling them to connect with and better serve families with children, ages 0-24 months, especially those in underserved and diverse communities.

4. NATIONAL IMPACT

Broader dissemination, sustainability, and adaptability: To support widespread adoption and to build national awareness of our findings, we have outlined our dissemination plan around three areas: the roadmap for the field, broader dissemination of the research, and preparation for a future grant proposal. To begin, the research team will create a project website to house information about the study, publications, and any updates.

 Roadmap for the field: To build national awareness of the research and its findings and increase adoption of the findings into practice, we plan to create a roadmap for the field that summarizes what we learned across two main areas: 1) the needs, barriers, and challenges that families with young children, ages 0-24 months, from underserved communities experience with supporting early brain development, learning, and health; and 2) how libraries can partner with CHPs to support families with children, ages 0-24 months, from underserved communities. Our goal with the roadmap is to share the findings with libraries and library practitioners nationwide to help them understand the needs of families with very young children, as well as the importance of uncovering the needs that exist within their own communities with early brain development, learning, and health, and identify some initial ways they can partner with CHPs to support these families in their own community. To maximize exposure of the roadmap we would look to publish it as a report through one of the library associations, such as the Public Library Association because of their Family Engagement Initiative, or as an article in a library association-publication that is sent to all members, such as *Public Libraries* or *Children & Libraries*.

 Broader dissemination of research: As a second method for increasing national impact, we will work to disseminate results from the grant in an ongoing manner through 1) national and state library conferences, such as ALA Annual, PLA Annual, ARSL, and ALSC Institute; 2) academic- and practitioner-focused library journals, such as *The Library Quarterly*, *Journal of Librarianship and Information Science*, *Public Library Quarterly*, *Children & Libraries*, and *Public Libraries*; and 3) health-focused academic journals and conferences, such as the Society for Pediatric Nurses Conference, *Journal of Community Health*, and *Family and Community Health*. This research team has a well-established record of practitioner-focused dissemination and will be prioritizing this audience to support critical information sharing and ensure targeted program design in libraries. In addition, members of the research team teach in higher education, training the next generation of library and nursing professionals. Each faculty member plans to share the roadmap and disseminate the results of this research through their classes to help students begin to develop their own understanding of the importance of the role that libraries can play with supporting early brain development, learning, and health for young children. We will also ask the project participants and advisory board members to share the roadmap and project findings within their own communities of practice. We will share the roadmap and project findings on library association listservs and other relevant social media groups. Project supporters and state libraries will be asked to publicize the roadmap in their own states and use it in any relevant training. To support widespread adoption and ensure sustainability we will continue to incorporate the roadmap and other publications into coursework and professional practice after the grant period has concluded.

 Plan for Future Grant Proposal: The planning grant will provide preliminary insight into how, if at all, libraries can partner with CHPs to support parents/caregivers during the first two years of their child's life and increase their understanding of how to encourage early brain development, learning, and health. Upon the completion of the planning grant, we will use these insights and initial data to design a more in-depth project grant proposal to develop replicable models of how libraries can continue to grow as catalysts in their community by expanding their community partnerships to include CHPs to reach and serve families with children, ages 0-24 months, in underserved communities. Deeper analyses of the qualitative and quantitative data sets from the planning grant will set the stage for this larger-scale research design. Additionally, it will enable us to triangulate our findings and work towards a more holistic view of effective community engagement strategies for libraries, which would greatly enhance the current research in the field and enable libraries to better understand how to become more effective catalysts for supporting early brain development, learning, and health for the youngest members of their communities.

	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July
Secure IRB approval	■											
P1: Design and pilot test survey protocols	■											
P1: Conduct surveys		■	■	■								
P1: Design and pilot test interview protocols			■									
P1: Recruit for and conduct interviews				■	■							
P1: Design and pilot test focus group protocols					■							
P1: Recruit for and conduct focus groups						■	■					
P2: Recruit for design workshop							■					
P2: Prepare for and conduct design workshops								■	■			
Analysis of survey, interview, focus group, and workshop data							■	■	■	■		
Development of preliminary workplan draft for project grant									■	■	■	
Prepare draft of roadmap with research results and recommendations									■	■	■	
Review of draft workplan and roadmap												■
Revise and finalize workplan for project grant												→
Revise, finalize, and publish roadmap for library field												→
Further analysis of all data collected											■	→
Disseminate grant results through conferences and publications										■	■	→

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.

The roadmap and other research products and content that emerge from the grant will be freely available to access and download from the project website. This work will be licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. We are using a non-commercial and non-derivative license as we do not want others to make money on it since it is a grant funded product and we do not want the content altered or revised.

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.

The roadmap and other research products and content that emerge from the grant will be freely available to access and download on the project website. The terms and conditions will be posted on the project website.

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.

We do not anticipate that the content created will involve privacy concerns, require obtaining permissions or rights, or raise cultural sensitivities. All of our data will be scrubbed of identifiable information to protect identity of the organizations and individuals involved.

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.

The project will result in a project website that includes: 1) information about the project; 2) the roadmap that emerges from the project; and 3) publications that come out of the project. The website will be hosted on Kent State University (KSU) servers and will be created using a standard development platform, such as Wordpress.

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.

The hardware and software necessary for creation of this content will be provided by KSU or the researchers. The research team will be using KSU workstations and personal audio and video recorders. Software for research activities, data production, and analysis will be provided by the researchers and KSU. Researchers will use Rev.com for transcription. Data analysis software (SPSS,NVIVO) will be used to analyze the all data. The project website will be produced by the research team

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.

File formats associated with this project will include: pdf, docx, pptx, mov, mp3, mp4, jpeg, xlsx, as well as data files and website files. Website support and guidance will be provided by KSU's IT Services Team to ensure quality standards are appropriate and that longevity and stability of file types are maximized.

Workflow and Asset Maintenance/Preservation

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

The roadmap and work plan for a future grant proposal will undergo several rounds of review and will be revised based on the feedback. In addition, the research team will review all data and project products prior to release. The research team will also test and monitor the project website and address any issues that arise.

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).

During the grant period all digital products and data will be stored on secure servers at KSU. The project website will also be hosted on KSU servers. After the grant period ends, the website will continue to be hosted on the KSU servers. The video and audio data files and transcripts will be moved to a password protected, encrypted, external hard drive to be held by the research team. Other research and digital data will be stored in the Open Access Kent State Repository at KSU.

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).

Metadata in the form of topics and subject tags will be used to provide organization and access to the project website. A site map and menu on the website will aid in navigating site content.

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

Metadata used on the project website will be periodically reviewed by the research team, at least annually after the grant period of performance. The research team will update terms and the metadata schema as needed to ensure the site continues to be useful and navigable.

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).

To support widespread discovery of the site, we will integrate search engine optimization principles into the design.

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).

Researchers will create a project website that will be freely available via standard web browsers. Content will be distributed throughout the site using tabs and menus. The website will be maintained on KSU servers and updated as needed by the researchers.

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.

Michelle Baldini, a co-PI, has been heavily involved in the design and development of the Reinberger Children's Library Center blog: https://reinbergerchildrensbookreviews.org/

Kathleen Campana, PI, has been heavily involved in the development and design of the following websites based on IMLS-funded research studies:
Project VIEWS2:https://views2.weebly.com/
Project LOCAL: https://projectlocalgrant.weebly.com/

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.

Not applicable for this project

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.

Not applicable for this project

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.

Not applicable for this project

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

Not applicable for this project

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

Not applicable for this project

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

Not applicable for this project

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

Not applicable for this project

Access and Use

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

Not applicable for this project

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

Name of publicly accessible source code repository:

Not applicable for this project

URL:

Not applicable for this project

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.

We will collect data through surveys, interviews, focus groups, and design workshops during the study. This research will collect 1) qualitative data--in the form of survey responses, audio and video files, and transcripts--collected during surveys, interviews, focus groups, and design workshops with library and community health practitioners; 2) quantitative data in the form of survey responses with library and community health practitioners; and 3) visual data of the artifacts that emerge from the design workshops. The data will be used in presentations and publications about the research and to inform the roadmap and the preliminary workplan. To facilitate openness and transparency with our participants, we will ask their permission to share data among participants.

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?

Once the project has been funded we will seek approval from the Kent State University's Institutional Review Board.

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.

In the surveys, focus groups, interviews, and design workshops we may collect identifiable information from library and community health practitioners. All identifiable information will be scrubbed and removed from the dataset before data analysis begins and as a condition of our IRB protocol.

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 word processing program and spreadsheet program will be necessary for retrieving the interview transcripts and survey data. A photo viewer and video and audio file player will be necessary for viewing the photos of the design artifacts and video and audio files of the design workshops, interviews, and focus groups.

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?

For the research, we will either collect signed paper consent forms which will be stored in a locked file cabinet in the locked office of the PI or virtual forms using an IRB-approved survey software. The virtual consents will be downloaded to password protected, encrypted, external hardrive and then deleted from the software. We will assign each participant a unique identifier to be used in the dataset to maintain their confidentiality. A password-protected spreadsheet kept on a secure server at the iSchool will hold the links between the unique identifier and the individual.

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

We will preserve the data in the Open Access Kent State repository at KSU. Data will be disseminated after the completion of the project through presentations and publications. Slide decks, publications, and other grant products will be shared through the project website and other relevant avenues.

A.7 Identify where you will deposit the data:

Name of repository:

Open Access Kent State, Kent State University

URL:

https://oaks.kent.edu

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

The research team will review the data management plan on a regular basis. The plan will be implemented and monitored by the research team.