Addressing the K-12 Homework Gap through Broadband Adoption

Abstract

The State Library of North Carolina and the North Carolina Broadband Infrastructure Office of the Department of Information Technology are the lead applicants for an IMLS National Digital Platform project grant. Additional collaborators include the Friday Institute Research and Evaluation (FIRE) Team, a unit of North Carolina State University's College of Education who will conduct the project evaluation and provide research assistance, the North Carolina Department of Public Instruction who will assist in connecting the project partners with local schools, and Kramden Institute, a non-profit computer refurbisher. The project will last two years, beginning in July of 2018.

K-12 students who are assigned homework requiring access to the internet, but don't have home access fall into what's called the "homework gap." The homework gap limits educational opportunities outside the classroom. The goal of this project is to design and implement a holistic, replicable, and scalable model to equip North Carolina's public libraries to address the K-12 homework gap in their communities.

As trusted community anchor institutions, public libraries are uniquely positioned to assist in closing of the homework gap in their communities. Leveraging statewide and local partnerships, this project equips libraries to simultaneously address the four primary challenges contributing to the homework gap—broadband access, affordable broadband service, access to a digital device at a student's home, and digital literacy training. The model will demonstrate how public libraries can help close the homework gap and increase broadband adoption through the provision of WIFI hotspots, digital literacy programming, educational resources, and ensuring access to digital devices through partnerships.

The model is designed to benefit two primary audiences—the libraries directly partnering with the project partners and the K-12 households who participate in the program. Specifically, K-12 households in the selected library system's communities without access at home to broadband are the primary target participants and those that would benefit most from the project

The project partners will hire a Digital Inclusion Librarian to lead the project and partner with up to four library systems across North Carolina to provide hotspots, digital literacy training and support for the duration of the project. Goals include 1) demonstrated evidence of reduced homework gap among population where project is implemented; 2) increased access and use of online resources and tools for participants; 3) increased digital literacy skills for participants; 4) increased partnerships between public libraries and schools; and 5) the production of a replicable and sustainable model (including funding strategies) for positioning and equipping libraries nationwide to provide services to decrease the homework gap. Anticipated project outcomes include 1) a toolkit outlining best practices for implementing the model to bridge the homework gap in communities throughout the country; and 2) a compilation of existing digital literacy training programs curated into a set of resources

Intended outcomes for the partner libraries are the knowledge and resources needed to implement a homework gap solution in their community. For participating K-12 households, the intended outcomes are increased digital literacy skills, increased understanding of the relevance of broadband, and increased rate of broadband adoption.

Addressing the K-12 Homework Gap through Broadband Adoption

1. National Need

Nationally, 7 in 10 teachers assign homework that requires internet access, but an estimated five million households with school-age children do not have internet access at home. These children—students who are assigned homework requiring access to the internet, but don't have home access—fall into what's called the "homework gap." Per a recent pilot study conducted by the Broadband Infrastructure Office (BIO) of the North Carolina Department of Information Technology,10 percent of surveyed K-12 households do not have internet access in their homes, but as of this year all textbooks in NC schools are now digital. FCC Commissioner Jessica Rosenworcel describes the homework gap as the "cruelest part of the digital divide." The homework gap will diminish educational outcomes and hinder future career and economic opportunities for the children who suffer from it.

Causes for the homework gap mirror those that prevent households from adopting broadband in their homes. Research shows that the four major obstacles to broadband adoption are: a lack of digital literacy knowledge, inability to afford purchase of internet service and digital devices, a lack of access to broadband service, and the lack of understanding how the internet is relevant to a person's life.

Recognizing these barriers, the project partners, the State Library and the Broadband Infrastructure Office (BIO), are requesting a grant in the amount of $249,204under the IMLS National Digital Platform project category to holistically address the barriers to broadband adoption and close the homework gap through the local libraries.

Many libraries across the nation have established models to check out WIFI hotspots in to patrons. However, there exists no coordinated effort to establish a model that promotes broadband adoption while addressing the homework gap. This project addresses each of the barriers to broadband adoption through partnerships and a coordinated approach to simultaneously address each barrier. The model will demonstrate how public libraries can help close the homework gap and increase broadband adoption through a combination of WIFI hotspots, digital devices, programming, and educational resources.

This project complements existing efforts to collect data and design solutions for the homework gap in North Carolina spearheaded by the project partner, BIO. In 2016, BIO released a State Broadband Plan[i] with over 80 recommendations including a recommendation to study the depth and nature of the homework gap in North Carolina. In partnership with the William Ida Friday Institute of the North Carolina State University, BIO conducted a pilot study in the spring of 2017, surveying over 8,000 of North Carolina's K-12 households.

In addition to supporting North Carolina's libraries in their pursuit of innovative programs and digital literacy training, the State Library has partnered with BIO since 2016 to address digital equity issues. The office helped distribute the homework gap survey in 2017 by partnering with local libraries to publicize the survey and encourage patrons to complete the survey when they visited the library.

Results of the pilot survey show that over 10 percent of respondents reported not having broadband access at home, and cost of the service was the overwhelming barrier to adoption for 67 percent of those lacking service. In addition, respondents without broadband were less

likely to own digital devices than those with access, and felt less comfortable using the internet to help their children with homework or perform their own tasks.
While further research is needed, the pilot's results align with national studies[ii] and previous broadband adoption research[iii]—indicating the causal factors impacting the homework gap mirror those that prohibit broadband adoption and require a multi-pronged solution.

North Carolina residents visit the state's public libraries over 33 million times each year. These patrons use the computers at the libraries over 6.5 million times on average each year. As trusted community anchor institutions that provide valued services, including resources to access the digital world, North Carolina's public libraries are perfectly positioned to help close the homework gap in their communities.

This proposal supports the IMLS National Digital Platform project category in expanding access to broadband services and further establishing public libraries as essential partners in reducing the homework gap. North Carolina is an ideal location to test the model because of its strong public library system, diverse geography and citizenry, existing broadband infrastructure, and strong existing partnerships between the libraries and organizations focused on expanding broadband access throughout the state.

Leveraging statewide partnerships, this project simultaneously addresses the four primary challenges that contribute to the homework gap—broadband access, affordable service, access to a digital device at a student's home, and digital literacy training. The model will demonstrate how public libraries can help close the homework gap and increase broadband adoption through a combination of checking out WIFI hotspots, digital literacy programming, educational resources, and ensuring access to digital devices through partnerships.

The model will primarily benefit two parties—the libraries directly partnering with the State Library and BIO and the K-12 households who participate in the program. Specifically, K-12 households in the selected library system's communities without access at home to broadband are the primary target participants and those that would benefit most from the project.

Based on the survey conducted by BIO in the spring of 2017, we understand the most likely challenges the target participants face in terms of the homework gap is cost of the broadband service, cost of the digital devices, and a lack of broadband service in their area. Other studies identify a lack of digital literacy skills in the family and not seeing the internet as relevant to their lives as additional challenges our target audience faces. Our project addresses each of these needs and challenges simultaneously.

This project builds upon existing research and scholarship by using the knowledge gained through recent studies to address the common causes of the homework gap—access, cost (of devices and access), and digital literacy. But it differs from other practices in that it focuses on equipping and leveraging the libraries, a trusted but underutilized resource in combatting the homework gap. It also encourages and will require a unique collaboration between local libraries, local public schools, state agencies, non-profits, and other community leaders to achieve optimal results.

2. Project Design

The proposed work plan is to partner with North Carolina library systems to implement a holistic model addressing the multiple causal variables contributing to the homework gap in North

Carolina communities. The project partners will hire a Digital Inclusion Librarian to spearhead the project and partner with up to four library systems across North Carolina to provide hotspots, digital literacy training, and support for the duration of the project. In each partner community, the partners will collaborate with the local schools to identify up to 30 K-12 families without internet service each school semester. Total, up to 300 K-12 families will participate in the program. Participants will be eligible to check out the hotspots for a full school semester, but to retain them they and their parent or guardian will be required to attend at least three digital literacy training sessions. As a requirement for selection, only library systems in which the school districts have a one-to-one program, or a program where schools allot laptops or tablets to each student to complete school and homework, will be considered. As such, all students participating in this program should have access to a laptop or other digital device. However, if a student does not have a device, Kramden Institute, an NC-based non-profit device refurbishing organization, will provide devices to the students free of charge.

The preliminary proposal included three participating sites in year one and up to three additional in year two. Based on feedback from evaluators, the project plan has been modified to improve likelihood of success: one pilot site will launch in year one with expansion to up to three additional sites in year two. In year two, the Digital Inclusion Librarian will compile lessons learned and best practices into a Toolkit from which other libraries across the state and nation can implement similar programs to close the homework gap in their communities.

The project will be evaluated by a third-party partner, the Friday Institute Research and Evaluation (FIRE) Team, a unit of North Carolina State University's College of Education. The FIRE Team provides a unique and comprehensive understanding of innovations in public formal and informal education in North Carolina and nationally, including special expertise in current research on defining successful innovative school models and measuring outcomes for students, teachers and leaders in non-traditional school settings. By combining exemplary research practices, diverse professional backgrounds, and strong working relationships with educators, stakeholders, and policymakers, the evaluation team contributes to effective, data-driven decision-making for the continuous improvement of teaching and learning.

The FIRE team will utilize the stated goals to evaluate the projects. The project's goals include: 1) demonstrated evidence of reduced homework gap among population where project is implemented; 2) increased access and use of online resources and tools for participants; 3) increased digital literacy skills for participants; 4) increased partnerships between public libraries and schools; and 5) the production of a replicable and sustainable model for positioning and equipping libraries nationwide to provide services to decrease the homework gap.
Anticipated project outcomes include 1) an online toolkit outlining best practices for implementing the model to bridge the homework gap in communities throughout the country; and 2) a compilation of existing digital literacy training programs curated into a set of resources tailored for the program's target population;

Project assumptions include 1) a need for a multi-pronged solution; 2) the necessity of digital literacy training, 3) access to digital devices and access to internet service in homes with K-12 students to close the homework gap; 4) the importance of libraries as a trusted partner and resource in closing the homework gap in their local communities; and 5) that other communities across the state and nation will benefit from the testing and perfecting of a holistic model, a toolkit, and best practices on leveraging libraries to close the homework gap.

The primary potential risks to the project are the risks of damage, loss, or theft of the hotspots paid for by the grant and distributed to the partner library systems. A phased approach starting with one library in the first year, means a smaller pool of equipment circulating at first and will allow review of policies and procedures to mitigate any potential risk of loss or damage when the project is scaled out in year two. Another potential risk is that parents or caregivers will be unable or unwilling to accompany the students to the library to participate in the required digital literacy training.

The project is built upon years of research conducted by BIO and nationally recognized researchers like the Pew Research Center that identifies the primary barriers to broadband adoption. The project's key activities are designed to holistically address the primary barriers through strategic partnerships using practices tested in different areas of the state and country.

Prior to the start of the program, the State Library and BIO will select one library system to partner with for the first year. In addition, the lead partners will hire a Digital Inclusion Librarian after the grant is awarded, prior to the project's start.

The library system partners will be selected from the 40 counties designated by the NC Department of Commerce as the most economically distressed, or Tier 1 counties. In addition, the following data points will be applied as criteria: free and reduced lunch rates at K-12 schools, broadband availability rates, broadband adoption rates, the presence of a one-to-one device program at their K-12 schools. Selected libraries within the library system will receive hotspots and support and training from the Digital Inclusion Librarian, BIO, the State Library, and the Department of Public Instruction. The Digital Inclusion Librarian and the libraries will partner with the local public schools to encourage families without internet to utilize the library's hotspots to connect at home. If any students are identified who do not have a computer at home or are not eligible to participate in their school's one-to-one program, the non-profit computer refurbisher, Kramden Institute, BIO's partner, will provide a device to the students free of charge.

Between year one and year two, the partners and the Friday Institute will conduct a robust evaluation of year one's implementation to inform any modifications for year two.

In year two, up to three additional library systems will be selected using the same criteria as in year one with the addition of a geographic diversity requirement. In year two, the selected partners will receive hotspots training and resources, providing an opportunity to test and refine best practices identified during year one. For year two, circulation periods of devices will be varied to include semester-long and shorter-term loan periods to test for impact on adoption, management, and digital literacy.

In addition, the Digital Inclusion Librarian will assemble case studies and lessons learned for the toolkit during year two. The final product will be made available online and in print by the end of year two.

The project relies upon cross-sector collaboration for success. In addition to the lead partners—the State Library of North Carolina and BIO—additional partners with subject matter expertise will be engaged to develop the project. State level partners include: The Department of Public Instruction (DPI), the Friday Institute, and Kramden Institute.

With assistance from BIO and the State Library, the Digital Inclusion Librarian will assist the selected library system develop and strengthen partnerships with the local public schools, local non-profits, and other community stakeholders who are interested in closing the homework gap in their community. The Digital Inclusion Librarian will also have freedom to obtain feedback from the partner community during the first year to incorporate their perspectives and contributions into the program in year two and in the final Toolkit.

With assistance from the Digital Inclusion Librarian, the State Librarian and BIO, the selected library system will partner with the local public schools to identify K-12 students without internet service at home to encourage to visit the library to enroll in the program.

The target participants for the program are underserved communities. Part of the criteria of the library system selected as a partner is that it must be in one of the most economically distressed counties in North Carolina. This requirement ensures the community served will be an underserved community. In addition, the students encouraged to participate will be low-income and traditionally underserved students.

Parts of the project will be standardized—each family will receive a hot spot and the partners will ensure they have access to digital devices of some kind. The digital literacy training will be customized to the skills and interests of the participants. Thus, the Digital Inclusion Librarian will work with the local librarians to compile a curriculum from existing digital literacy resources, and tailor it to the needs of those in the community.

This project will require the time and addition of a full-time staff person, that the State Library will hire, the Digital Inclusion Librarian. In addition, the project will require time from personnel from the State Library and BIO who will provide support and subject matter expertise to the new hire.

The proposed Digital Inclusion Librarian position in collaboration with existing staff from the State Library and the Broadband Infrastructure Office will be the project lead and be responsible for implementing and managing the project. The position will lead the identification of appropriate resources and curricula, training, dissemination of equipment, and compilation of the toolkit. However, staff from the project partner organizations and partner organizations will assist the Digital Inclusion Librarian in accomplishing the project goals.

The State Library will provide resources, guidance, subject matter expertise, and support to the Digital Inclusion Librarian throughout the project. Specifically, the Continuing Education Coordinator will assist the Digital Inclusion Librarian in identifying and compiling appropriate digital literacy training curricula from existing resources, the Data Analysis Consultant will assist with data collection and analysis, and the State Library's administration will assist the Digital Inclusion Librarian in compiling periodic reports to keep the project on track.

BIO will provide program planning support, subject matter expertise on broadband and the homework gap, connections to local partners, assistance in establishing a method for distributing the hotspots and digital devices, and acting as a connector to other partners such as the Department of Public Instruction or Kramden Institute. BIO will also identify internet service providers in the area for partnership in providing service and leverage NCDIT's convenience contracts with wireless carriers to procure service. Additionally, the office can conduct the necessary infrastructure evaluations to determine connection feasibility and trouble-shoot any

impediments or barriers to connectivity. BIO's Research and Policy Specialist will assist in developing and deploying the surveys, compiling case studies for the toolkit, measuring progress towards established benchmarks and goals, identifying and compiling digital literacy resources for curricula design, and provide any other needed research and policy support to the Digital Inclusion Librarian. In addition, BIO's Director and technical assistance team will procure the hotspot devices and provide technical expertise as needed.

The FIRE team from the Ida Friday Institute of North Carolina State University will provide a final evaluation of the project and provide research assistance including assistance in survey design and analysis.

The Department of Public Instruction (DPI) will assist the project partners and the Digital Inclusion Librarian in identifying and coordinating with staff from the partner schools. Kramden Institute will provide refurbished devices to participants without devices and will share their digital literacy curriculum with project partners.

To provide a salary and benefits to the new hire, purchase and pay for the monthly subscription of the hotspots, pay for travel for the new hire, and contract with the Friday Institute to complete the evaluation of the program, the full dollar amount requested from the IMLS, $249,204 will be needed.

To evaluate the project, the project partners will collaborate with the FIRE Team from the Friday Institute to create a logic model and identify performance metrics prior to the start of the program aligned with stated strategies, objectives and goals. Intended data sources that will be used to measure progress include: data analytics from devices made available because of the grant, observations, focus group discussions with participants, and surveys. Finally, the partners will leverage existing data sets and sources collected by the State Library and BIO to measure progress towards goals and objectives.

The evaluation and performance measurement are built into the program design. A comprehensive evaluation plan will be developed in partnership with the FIRE Team and will be designed in detail before the program launches. A two-tiered evaluation approach (implementation and impact) will be used by our external evaluator. Findings will be provided throughout program implementation so that necessary program changes can be made. Additionally, a summative evaluation will provide insight about overall program performance and impact.

All partners will collaborate on dissemination of the model and best practices once the project concludes. The final products of the project will be made available to all partners and interested stakeholders. In addition, we will house an online toolkit with best practices on BIO and the State Library webpage as well as any other additional tools and resources such as K-12 focused digital literacy training materials, equipment testing and training materials, curriculum guides compiled by the Digital Inclusion Librarian during the project. Hotspots will continue to be loaned by the State Library to local libraries wanting to address the homework gap in their communities. Findings will be disseminated through online, print, social media, and other library, broadband, and IT outlets as well as presentations at relevant meetings and conferences of organizations such as COSLA, SHLB, NDIA, NTEN and PLA. If resources and time permits, the partners will offer virtual or in-person trainings for those seeking to implement the toolkit in their community.

Once designed and made available online, the toolkit will enable any library interested in designing a hotspot or digital device lending program targeted at closing the homework gap to do so without extensive assistance. Thus, the best practices, guidelines and resources will live online once the program ends and will be updated periodically by the State Library and BIO.

If the need exists, the partners will seek to obtain funding and resources to fund the continuation of the Digital Inclusion Librarian position after the grant ends so a point-person exists to assist the local librarians in closing the homework gap and the digital divide in their communities.

3. Diversity Plan

This project will pilot these solutions in rural, and economically distressed communities throughout North Carolina as identified by a tier system designed by the North Carolina Department of Commerce. For 2018, 40 NC counties are designated as Tier 1 counties, they are the state's most economically distressed and all are candidates for this program based on that status. However, the selection of the final three counties will be informed by the following considerations: the presence of a 1:1 device program at their K-12 schools, geographic diversity (will select one county in the western region, one in the central region, and one in the eastern region of the state), free and reduced lunch rates at the K-12 schools, and the library system's capacity.

This project is designed to address the unique needs of K-12 households that fall into the homework gap—access to affordable broadband service, access to digital devices, and access to digital literacy training that advances their digital skills and introduces them to tools and resources the internet can offer.

This project addresses the needs of K-12 households that fall into the homework gap through the provision of a hotspot to provide internet service at home, the assurance that they will have access to a digital device at home, and the provision of digital literacy training for both the student and the student's guardian. These interventions are tailored to the needs of K-12 households without access to broadband in their homes. In addition, the digital literacy training will be tailored to the unique needs of each community.

4. National Impact

The project will result in a best practices toolkit available for libraries nationwide that establishes them as a leader in bridging the "cruelest part of the digital divide" through a holistic model in local communities. The toolkit will compile lessons learned, best practices, case studies, digital literacy trainings and resources identified throughout the project, and recommendations for implementing similar projects from lessons gleaned through testing the model for two years in four diverse locations.

Any library will be able to learn from and adopt all or portions of the toolkit to close the homework gap and digital divide in their communities. It will enable transformation and systemic change in that it will provide a model for holistically addressing the homework gap and the digital divide in their communities rather than focusing on just one aspect of the divide. In addition, it will position and enable libraries to expand their role in closing the homework gap

and the digital divide in their communities and serve as a platform for creating new or strengthening existing partnerships and collaborations between libraries and local schools.

The toolkit will benefit multiple institutions and audiences. It will be useful for all libraries, despite location, size, and population served. Additional audiences could include local and state governments, policy makers, or nonprofits who seek to implement programming to close the homework gap in their communities.

North Carolina is a geographically and populationally diverse state. Because of its diversity, one-size-fits-all solutions are typically ineffective. As such, this project is designed such that during year one, the solution will be tested and refined in one library system, then expanded and adapted to up to three additional library systems in year two. In year two, those solutions will be tested and refined, resulting in a tailorable model that others can easily adapt to their community's needs. This process will produce a product that is replicable and tailorable for any community throughout the country.

During the two-year grant, the Digital Inclusion Librarian, the State Library, and BIO will work with the local partners to identify funding to continue offering the services after the grant ends. In addition, the toolkit will provide resources and information on sustaining the model.

We will collect benchmark data to measure the program's success through surveys distributed throughout the project, publicly available administrative and education data, and in-person interviews or focus groups as needed. The data will be compiled and reported in a final memo that will accompany the toolkit.

The following benchmarks are designed to measure progress towards reaching the project goals detailed (on page 3) above. Benchmarks will be measured a minimum of four times throughout the grant-term, twice a year, after each school semester. As separate cohorts of patrons will receive the hotspots and digital literacy training for a variety of time periods, full school semesters in the first year, and various lengths of time in the second semester over the course of the program, measurement of each patron's progression will occur when they check out the hotspot device, return the hotspot device, and again after the program. The benchmarks that measure progression of increasing partnerships and the production of a model will also be measured four times.

Project Goal	Y1 Q1	Y1 Q2	Y2 Q1	Y2 Q2
Demonstrated evidence of reduced homework gap among population where project is implemented	20% increase in broadband adoption rates among Year 1 Q1 participants	20% increase in broadband adoption rates among Year 1 Q2 participants	20% increase in broadband adoption rates among Year 2 Q1 participants	20% increase in broadband adoption rates among Year 2 Q2 participants
Increased access to online resources and tools for participants	30% of participants are equipped to access their LEA's digital learning tools after returning hotspots	30% of participants are equipped to access their LEA's digital learning tools after returning hotspots	30% of participants are equipped to access their LEA's digital learning tools after returning hotspots	30% of participants are equipped to access their LEA's digital learning tools after returning hotspots
Increased digital literacy skills for participants	60% of participants increase at least one level in a stratified ranking of digital literacy skills competencies	60% of participants increase at least one level in a stratified ranking of digital literacy skills competencies	60% of participants increase at least one level in a stratified ranking of digital literacy skills competencies	60% of participants increase at least one level in a stratified ranking of digital literacy skills competencies
Increased partnerships between public libraries and schools	Partnership between Library System 1 and at least 1 school established	Partnership between Library System's 2, 3, and 4 and at least 1 school established	Partnership between all 4 partner library system's and schools maintained	Partnership between all 4 partner library system's and schools maintained
The production of a replicable and sustainable model for positioning and equipping libraries nationwide to provide services to decrease the homework gap.		Lessons learned from Q1 compiled	Lessons learned from year 1 compiled, outline of toolkit produced	Toolkit outline finalized, web development of toolkit completed

[i] Broadband Infrastructure Office. 2016. "Connecting North Carolina: State Broadband Plan." North Carolina Department of Information Technology. https://ncbroadband.gov/sbp

[ii] Horrigan, J. April 20, 2015. "The numbers behind the broadband 'homework gap'. *Pew Research Center*. Retrieved from http://www.pewresearch.org/fact-tank/2015/04/20/the-numbers-behind-the-broadband-homework-gap/
[iii] NC Broadband. May 2015. "Results and Conclusions from a Research Program Designed to Investigate Broadband Adoption and Use in Low-Income Households". North Carolina Department of Commerce.

DIGITAL PRODUCT FORM

Introduction
The Institute of Museum and Library Services (IMLS) is committed to expanding public access to federally funded digital products (i.e., digital content, resources, assets, software, and datasets). The products you create with IMLS funding require careful stewardship to protect and enhance their value, and they should be freely and readily available for use and re-use by libraries, archives, museums, and the public. However, applying these principles to the development and management of digital products can be challenging. 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

- ☐ Please check here if you have reviewed Parts I, II, III, and IV below and you have determined that your proposal does NOT involve the creation of digital products (i.e., digital content, resources, assets, software, or datasets). You must still submit this Digital Product Form with your proposal even if you check this box, because this Digital Product Form is a Required Document.

If you ARE creating digital products, you must provide answers to the questions in Part I. In addition, you must also complete at least one of the subsequent sections. If you intend to create or collect digital content, resources, or assets, complete Part II. If you intend to develop software, complete Part III. If you intend to create a dataset, complete Part IV.

Part I: Intellectual Property Rights and Permissions

A.1 What will be the intellectual property status of the digital products (content, resources, assets, software, or datasets) you intend to create? Who will hold the copyright(s)? How will you explain property rights and permissions to potential users (for example, by assigning a non-restrictive license such as BSD, GNU, MIT, or Creative Commons to the product)? Explain and justify your licensing selections.

Any products developed through this project will be freely available to potential users as it will be public information. The public policy of the State of North Carolina as established by the General Assembly is to "provide that, as a general rule, the public would have liberal access to public records."

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 State Library will not assert any rights over any digital products that may be created.

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.

No expected concerns.

Part II: Projects Creating or Collecting Digital Content, Resources, or Assets

A. Creating or Collecting New 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 format you will use.

Potential digital content would include digital literacy training resources, best practices, and case studies. Digital content may be created in Microsoft Office products and will be saved in PDF/A format as recommended by the State Records Center.

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

Microsoft Office, Adobe Acrobat

A.3 List all the digital file formats (e.g., XML, TIFF, MPEG) you plan to use, along with the relevant information about the appropriate quality standards (e.g., resolution, sampling rate, or pixel dimensions).

.doc, .html, ,pdf

B. Workflow and Asset Maintenance/Preservation

B.1 Describe your quality control plan (i.e., how you will monitor and evaluate your workflow and products).

The State Library's Digital Information Management Program staff will assist in monitoring and advising.

B.2 Describe your plan for preserving and maintaining digital assets during and after the award period of performance. Your plan may 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).

Documents will be stored on the State Library shared drive and will be made available through the State Library's website.

C. Metadata

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

The State Library's Digital Information Management Program staff will guide creation of any metadata using appropriate schema.

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

The State Library's Digital Information Management Program staff will advise.

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).

The State Library's Digital Information Management Program staff will advise.

D. 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).

Materials will be made openly available online.

D.2 Provide the name(s) and URL(s) (Uniform Resource Locator) for any examples of previous digital content, resources, or assets your organization has created.

NCpedia: https://www.ncpedia.org/

Library Data and Statistics: https://statelibrary.ncdcr.gov/ld/about-libraries/data

Part III. Projects Developing Software

A. 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 functions, and explain how the software you intend to create is different, and justify why those differences are significant and necessary.

B. Technical Information

B.1 List the programming languages, platforms, 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) and URL(s) for examples of any previous software your organization has created.

C. Access and Use

C.1 We expect applicants seeking federal funds for software to develop and release these products under open-source licenses to maximize access and promote reuse. What ownership rights will your organization assert over the software you intend to create, and what conditions will you impose on its access and use? Identify and explain the license under which you will release source code for the software you develop (e.g., BSD, GNU, or MIT software licenses). 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.

C.2 Describe how you will make the software and source code available to the public and/or its intended users.

C.3 Identify where you will deposit the source code for the software you intend to develop:

Name of publicly accessible source code repository:

URL:

Part IV: Projects Creating Datasets

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

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 personally identifiable information (PII), confidential information (e.g., trade secrets), or proprietary information? If so, detail the specific steps you will take to protect such information while you prepare the data files for public release (e.g., data anonymization, data suppression PII, or synthetic data).

A.4 If you will collect additional documentation, such as consent agreements, along with the data, describe plans for preserving the documentation and ensuring that its relationship to the collected data is maintained.

A.5 What methods will you use to collect or generate the data? Provide details about any technical requirements or dependencies that would be necessary for understanding, retrieving, displaying, or processing the dataset(s).

A.6 What documentation (e.g., data documentation, codebooks) will you capture or create along with the dataset(s)? Where will the documentation be stored and in what format(s)? How will you permanently associate and manage the documentation with the dataset(s) it describes?

A.7 What is your plan for archiving, managing, and disseminating data after the completion of the award-funded project?

A.8 Identify where you will deposit the dataset(s):

Name of repository:

URL:

A.9 When and how frequently will you review this data management plan? How will the implementation be monitored?

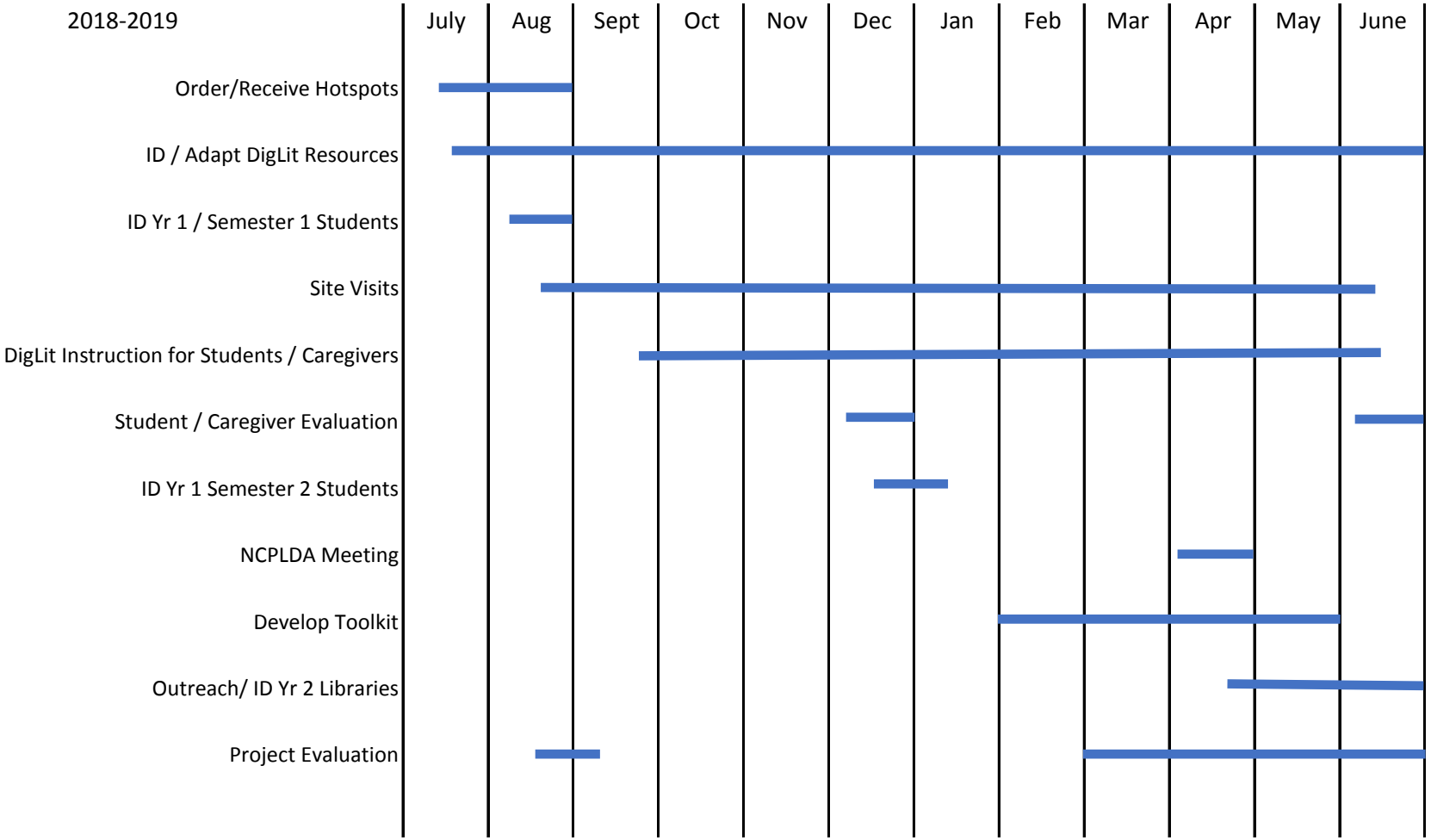
Addressing the K-12 Homework Gap through Broadband Adoption

State Library of North Carolina

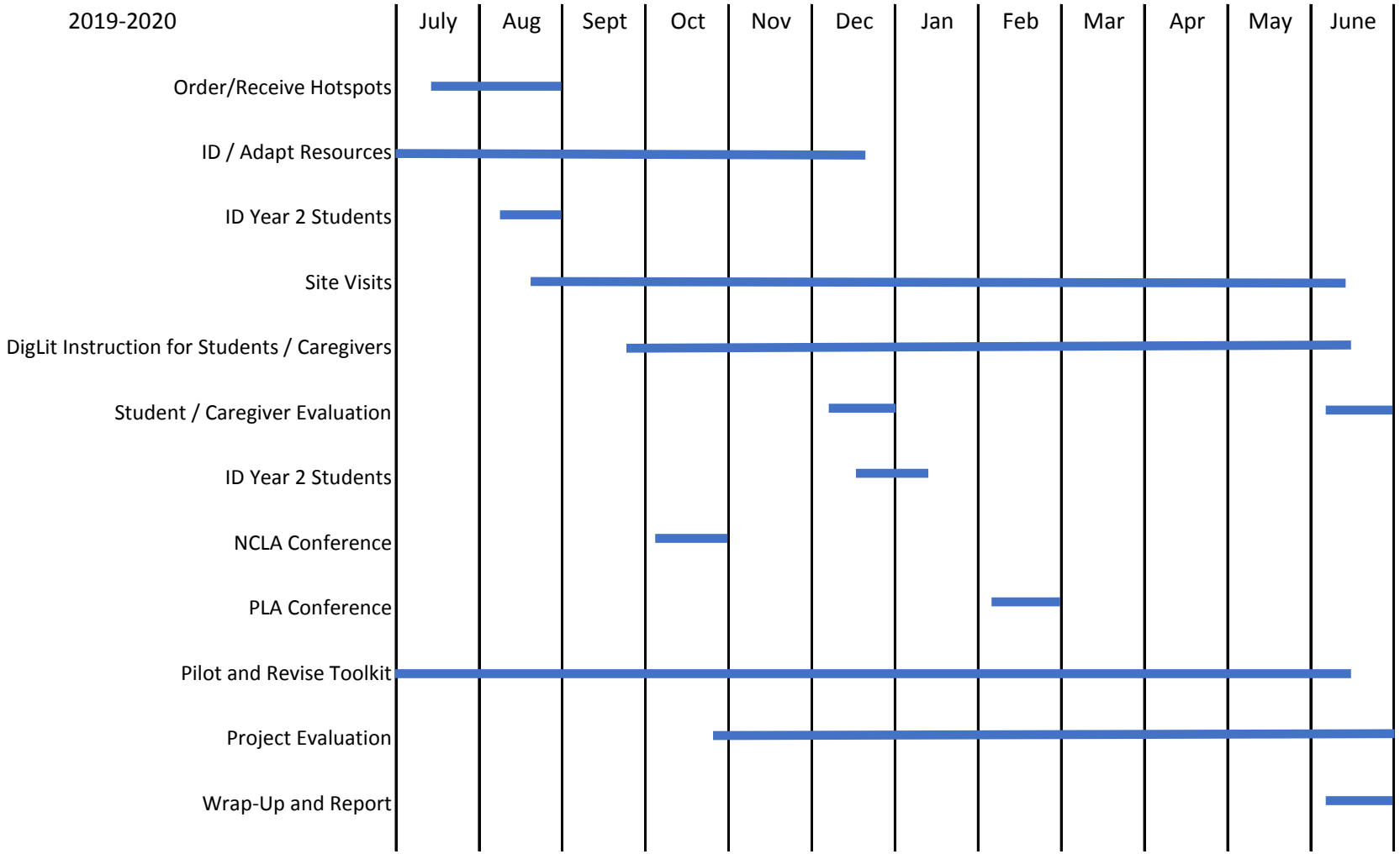
Tasks completed prior to project start:

Recruit and hire *Digital Inclusion Librarian* , Identify target library and school(s) for year 1 piloting.

Year 1



Year 2


2019-2020
July
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
June
Order/Receive Hotspots
ID / Adapt Resources
ID Year 2 Students
Site Visits
DigLit Instruction for Students / Caregivers
Student / Caregiver Evaluation
ID Year 2 Students
NCLA Conference
PLA Conference
Pilot and Revise Toolkit
Project Evaluation
Wrap-Up and Report