Abstract

The lead applicant of this project is Syracuse University's School of Information Studies. This two-year highly collaborative community anchor project addresses IMLS' strategic plan for creating a nation of learners with its emphasis on preparing rural youth from an early age to contribute to the future economic viability of their communities through a combined literacy/innovation initiative. The expertise of 20+ individuals and organizations will contribute to project design, development, implementation, evaluation, and dissemination.

Rural communities across the United States face significant challenges, such as the lowest employment and economic growth rates and lower educational attainment, that impact their potential for innovation. Additionally, many rural areas struggle to provide families with the support and resources needed to promote childhood literacy (Columbia University, 2017) that is essential to engaging in information seeking to solve problems and innovate. According to a report by the American Library Association (Real & Rose, 2017), rural libraries can help their communities through services and programs. Children from rural areas need to begin to develop their innovative thinking skills starting from an early age so that they are better prepared to tackle the issues that challenge their communities and contribute to future economic growth as adults. The overarching goal of this National Leadership Grant Community-Anchor pilot project is to concurrently support both literacy and innovation skills in grades K-3 children by creating and evaluating a replicable after-school *literacy-innovation connections* program in eight public libraries and to refine and disseminate the program nationally through *The Innovation Destination (TID)*, an existing successful web-based resource created by the same project team and launched at the 2017 November Conference of the American Association of School Libraries (AASL).

The proposed project brings exciting new audiences to TID, expanding from school libraries to include public libraries and rural communities, adding K-3 young innovators to its current grade 4 – 8 database of video resources, and extending the all-innovation content to include the important literacy layer to innovation mentoring. Additionally, the literacy aspect of the proposed project will incorporate lessons learned from a locally funded, recently completed 3-month exploratory project, partnering this proposal's project director, the library director of a rural public library and a school librarian in North Carolina. The *My Little Home Library* program focused on promoting reading interest and family engagement through its interactive after-school reading and nature-based activities program that also helped children build their own home libraries; the program included a strong family literacy component that we would also include in the proposed project. The family literacy component is important to the proposed IMLS project because it acknowledges the positive impact that parents can make on children's attitudes toward learning and literacy when they take an active role in these types of activities.

The project team partners with eight rural public libraries in different regions of the country as well as By Kids For Kids and the Georgia Inventure Project (organizations that promote youth innovation), six project advisors that include nationally recognized library leaders in literacy, innovation, and rural libraries, a program design team of librarians, and Data Momentum, a technical partner who worked on the TID project.

The project team will employ an outcome-based evaluation plan to measure the effectiveness of the program for its several audiences. The anticipated project outcomes include: 1) Participating librarians will gain both knowledge and confidence in providing innovation-literacy connections for their young patrons, 2) Participating libraries (directors and librarians/program facilitators) will report an intention to offer the program again in their communities, 3) Child program participants will demonstrate increased knowledge and motivation to engage in literacy and invention activities, 4) Parents of participating children will spend more time in literacy-based activities with their children, and 5) As a result of the project's dissemination effort and expansion of the resource, there will be an increase in awareness, use of, and satisfaction with the TID resource.

The potential for national impact is high if the program proves successful. The early years of kindergarten through grade 3 are critical to developing a trajectory toward success in later school years. National impact can also be expected because this project builds on an existing, national, successful IMLS project, *The Innovation Destination*.

Making the Literacy-Innovation Connection for Rural Public Libraries and their Youngest Patrons

1.0 STATEMENT OF NATIONAL NEED

1.1 Introduction

This community anchor project addresses IMLS' strategic plan for creating a nation of learners because of its emphasis on preparing rural youth from an early age to contribute to the future economic viability of their communities and beyond through a combined literacy/innovation initiative.

In their report, commissioned by the American Library Association (ALA), authors Real and Rose (2017) commended rural libraries on the remarkable range of services they provide with limited staff, space, and resources, concluding "(R)ural librarians stretch their resources to the limit in service to the public, and any additional resources they receive will result in even greater benefits to their communities" (p. 15). This two-year *IMLS National Leadership Project Grant: Community Anchor* project (start date: Dec. 1, 2018) aims to become one of those valuable additional resources by 1) designing, developing and pilot-testing an after-school program in eight rural libraries with the dual and concurrent goals of supporting both literacy and inventive thinking in young patrons in the primary grades (K-3), and 2) ensuring that all program materials and video resources developed through this project are freely available nationwide by disseminating them through the successful IMLS-funded Young Innovators Project web site, "The Innovation Destination," showcased at the November 2017 National Conference of the American Association of School Librarians (AASL). Although the proposed project will be carried out in and especially useful to rural libraries, the transfer value should be considered high for public and school libraries in both urban and suburban areas; the tools for supporting literacy and creativity generated through the project are applicable to all children, not only those living in rural areas. The following sections will detail the need for the proposed project.

1.2 Rural Communities

Rural communities across the United States face significant challenges that can serve as barriers to their future economic growth and to innovative solutions to problems that could make a difference to their residents and beyond. A report on rural libraries in the United States by the ALA (Real & Rose, 2017) notes that rural areas have the lowest home broadband Internet adoption rates, the lowest employment rates and economic growth rates, and the lowest educational attainment rates, but suggests that "(R)ural libraries are part of the solution to addressing these concerns" (p. 1).

Children from rural areas need to develop their innovative thinking skills starting from an early age so they are better prepared to tackle the issues that challenge their communities and contribute to economic growth. Additionally, many rural areas struggle to provide families with the support and resources needed to promote childhood literacy (Columbia University, 2017) that is essential for engaging in information seeking behaviors to solve problems and create innovations. Literacy is so vital to future academic success and career readiness that a focus of the National Center for Education Statistics of Middle Grades Longitudinal Study of 2017-18 is reading (NCES, accessed 5/20/2018).

1.3 Rural Public Libraries

While rural libraries can be part of the solution to helping their community members prepare to contribute to the future economic growth and resolution of problems confronting their communities, they face difficult challenges of their own, including staffing, resources, funding, and professional development (Freeman, 2016). Only one-third of rural librarians hold a Master's of Library Science from an ALA-accredited program (Swan, Grimes & Owen, 2013) and many rural libraries must provide services to their communities while depending greatly on part-time staff (Fischer, 2015). Even facing such challenges, rural libraries are making a difference in their communities as service utilization continues to increase (Swan et al, 2013), and as public libraries, in general, are evolving to meet their communities' needs (Pelczar, M., Frehill, L. M., Williams, K., Wan, C., &

Nielsen, E., 2018). However, often there is little time to devote to new program development when there are fewer staff members who are also spread so thin.

The Association for Library Service to Children (ALSC), a division of the ALA, calls for librarians in children's services in public libraries to provide library programs that instill curiosity and mastery for all children, integrate technology, and promote literacy enhancement in program designs (ALSC, 2015). There are numerous projects that already address childhood literacy across the United States (e.g., SMART, a program of the Oregon Children's Foundation, NYS's Family Literacy Library Services program), and projects that encourage curiosity and creative thinking in young children (e.g., the ongoing Makerspace Movement), yet few projects are designed with the express goal of strategically connecting a successful pilot literacy effort *specifically targeting rural communities* with an established innovation project. This is the overall goal of the proposed project. Both the pilot literacy effort and the established innovation project will be detailed under Project Design.

1.4 Need for Mentoring Inventive Thinking Skills and Encouraging Curiosity
Over the past few years, libraries have been creating innovation spaces and activities for children and, while some involve mentoring, many are tailored more to free exploration than to developing requisite skills (e.g., literacy, problem-solving) for successful innovation. Research has shown that innovation is best fostered when there is allowance for autonomy and flexibility, but there is also guidance and some structure (Martins and Terblanch, 2003), particularly critical for young learners in the primary grades, our target audience.

While creativity and innovation are related, creativity is "the production of novel, appropriate ideas in *any* realm of human activity," and innovation refers to the "successful implementation of those novel appropriate ideas" (Amabile, 1989, 1996). Amabile argues that the skills, attitudes, and behaviors underlying creativity and innovation can and should be encouraged and even taught. Unfortunately, creative youngsters often cannot depend on their classroom teachers to stimulate and support creative ideas; rather, Cropley & Cropley (2013) found that teachers often express disapproval of such students, even though Small's research (2014) revealed that young innovators typically depend on adult mentors to guide and support their innovation efforts. Wagner (2012) discovered that young innovators, from both affluent and *high needs schools*, need mentors to encourage their passions and preliminary analysis of interview data from the current young innovators study by Small and Arnone (2018) support these findings. While some children are fortunate to be encouraged to think creatively and engage in innovation activities, many do not have access to such support (Small, 2014).

Arnone and Small (2013) find that curiosity is critical to intellectual development, creativity, and problem-solving activities. "It is the curious, inquisitive child that becomes tomorrow's innovator – discovering cure for a disease, creating a technology for harnessing low-cost, alternative, eco-friendly energies, developing a service that increases independence for people with disabilities" (Arnone, et al., 2011, p. 195). It is curiosity that leads to inquiry---questioning and exploration in search of answers and solutions.

Stripling's Inquiry Model (e.g., Small, Arnone, Stripling & Berger, 2012) begins with a Wonder component that incorporates curiosity and question-asking and hypothesis/prediction-making. Curiosity and wonder must be supported in a learning environment designed to stimulate creativity and inventive thinking. This may be more possible in the informal learning environment of a public library than in schools; Harter (1980, 1981) found a steady decline in children's motivation (including curiosity) at about third grade and continuing through grade 9, never returning to its original level. Little is known about why the decline occurs in formal learning settings but we suspect that rigid testing requirements and educators' lack of time to answer all the *why* questions of early childhood may be part of the problem.

Curiosity may not have changed as a construct since the 1980's but certainly how children react to curiosity in today's technology pervasive environments may have changed and needs to be considered in program design and development (Arnone, Small, Chauncey, & McKenna, 2011; Arnone & Small, 2013). The proposed project is intended to stimulate and build on children's innate curiosity and inquiry, providing tools and resources that motivate them to seek answers to their questions and role models that inspire, and potentially leading to the development of a passion for what was learned. Curiosity Creek, an existing, free K- 3 resource

of children's creative and literary products, was previously developed and tested by the proposed project's director specifically to foster children's curiosity and inquiry and will be leveraged for this project.

1.5 Section Summary
The proposed 2-year project seeks to benefit rural libraries and children's librarians by providing them with the knowledge and tools needed to create stimulating K-3 learning environments that serve a physical and emotional space in which children's imaginations, creativity, and sense of wonder are valued, nourished and expanded. It will leverage existing resources (*Curiosity Creek, The Innovation Destination*) to create synergy and build on strengths while reducing project expenses. With Syracuse University as the lead organization, the project team will partner with eight rural public libraries representing a variety of U.S. geographic regions, as well as our young innovators recruitment partners By Kids For Kids and the Georgia Institute of Technology Inventure Prize Competition (organizations that support youth innovation), Data Momentum (our technical partner for the web-based resources), the Project Advisory Committee (PAC), and a three-librarian design team of contributors of activities and thinking challenges for program use. Our project goals and performance outcomes are detailed in 2.0.

2.0 PROJECT DESIGN

In this section of the proposal, we define our project goals beginning with project outcomes and moving to the technical goals in service of those outcomes. The project activities and their relationship to innovation and literacy practice are detailed in section 2.2 along with a description of how we build consensus through our project advisors. Our theory of change will then be presented graphically through a logic model that clearly depicts the national need/situation we will address, assumptions, external considerations, and how we envision change occurring through project inputs, activities and outputs, and outcomes. The work plan includes a brief timeline in this section (with a more detailed schedule of completion as a separate document), a subsection on our project management team, evaluation plan, and communication and sustainability plans.

2.1 Project Goals
The anticipated <u>project outcomes</u> relate to several audiences served by the project including the librarians (and their library directors) from rural libraries who deliver the program initiative, children participating in the program, parents of child participants, and users of *[The Innovation Destination](#)* resource. They are:

1. Participating librarians will gain both knowledge and confidence in providing innovation-literacy connections for their young patrons. (assessed using interviews, journals, questionnaires, observations)
2. Participating libraries (directors and librarians/program facilitators) will report an intention to offer the program again in their communities. (assessed using journals, interviews, email correspondence)
3. Children participating in the after-school program will demonstrate increased knowledge and motivation to engage in literacy and invention activities. (assessed using observations, interviews, journals)
4. Parents of participating children will spend more time in literacy-based activities with children and report improvement. (assessed using observations, interviews)
5. As a result of the project's dissemination effort and expansion of the resource, there will be an increase in awareness and use of and satisfaction with *The Innovation Destination* resource by rural and other librarians working with young children. (assessed using Web analytics)

In service of the above outcomes, the proposed project focuses on 1) the design, development, iterative testing, revision, implementation and evaluation of an integrated multi-faceted literacy/inventive thinking initiative for K-3 learners, 2) the use of *Curiosity Creek* as a showcase for children's original stories created through the proposed program, and 3) expanding the audiences (rural libraries and K-3) and resources of *The Innovation Destination* website. With this in mind, the <u>technical goals</u> of the project are as follows:

1. Developing **(Yr. 1)** and implementing **(Beginning Yr. 2)** a model after-school *Literacy-Innovation Connections* program in eight participating rural libraries**;**
2. Selecting and purchasing a collection of literary/informational books for young children, related to innovation for eight libraries **(Yr. 1)**;

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3. Refining and making available the after-school *Literacy-Innovation Connections* program model for use by rural libraries nationwide on *The Innovation Destination* website thus expanding the resource's current innovation mentor training as well as its searchable database of resources and activities for librarians to K – 8 **(Yr. 2)**;
4. Recognizing participants' literary and innovation accomplishments by publishing their written, illustrated stories about their innovations on the *Curiosity Creek* website and also accessible through *The Innovation Destination's* searchable resource database under a new field, "Child-Authored Stories." **(Yr 2)**;
5. Producing 12 trigger videos for K-3 children featuring information and advice from grade 4 – 8 inventors as "inventor mentors," to be used in the weekly after-school program to help children better understand the inventive thinking process; and added to *The Innovation Destination's* section "Mentoring Young Innovators"**(Yr. 1)**;
6. Interviewing 20 recognized K-3 child inventors, recruited through our youth innovation organization partners, editing them into 200 video clips, and adding them to *The Innovation Destination*'s video database for use in both the after-school program and by site visitors **(Yr. 1)**; and
7. Using a variety of channels, disseminating information about all of the above to libraries, schools and youth innovation organizations **(Yr. 2).**

2.2 Project Activities

The following activities, informed by theory and practice, incorporate both literacy and inventive thinking skills development.

The Literacy Component. The literacy component will feature a carefully selected collection of paired literary and informational texts that inspire creativity and innovation. The project team, with the help of the PAC and a team of three librarians who will assist in developing the after-school program materials, will select books based on their ability to contribute to each week's innovation activities. This facet of the proposed project will also incorporate some lessons learned from the *My Little Home Library* project, a locally-funded 3-month exploratory project just completed (May 24, 2018) under the co-direction of the project director for the proposed project and the library director of a rural public library in Pamlico County, with the assistance of the school librarian in the same rural district in North Carolina. These individuals have agreed to serve on the PAC for the proposed project; their letters are included in the supporting documents for this proposal. A video capturing highlights of the program is available (length is 3:30).

The *My Little Home Library* project promoted reading interest and family literacy through its interactive after-school reading and nature-based activities program that also helped children build a home library. The program included a strong family literacy component that we will also include in the proposed project. We found that children loved finding their "spot" in the library where they could read to or with their parents. Thus, for the proposed project, we plan to build on this family literacy model program in which the parents or guardians of the participating children will stay for a 15-minute book sharing time and brief innovation activity with their children possibly called "share and snack" time.

The family literacy component acknowledges the positive impact that parents who take an active role can have on their children's attitudes toward learning and literacy. To engage in innovation, children will use their budding reading skills to learn about a problem or to tackle an inventive thinking challenge; thus, fostering a love of and practice in reading and writing will be an important part of the initiative.

The Innovation Component. The innovation facet of the proposed *Literacy-Innovation Connection* project will build, create synergy with, and utilize the existing resources of our current effort, funded by IMLS, for Grades 4-8 that has resulted in the creation of *The Innovation Destination* website, launched at the 2017 American Association of School Librarians Conference in Phoenix, AZ. This resource (led by the project team) currently includes innovation mentor training for Grades 4-8 librarians, a database of 500+ video clips from interviews on the innovation process with recognized Gr 4-8 innovators, STEM-based lesson plans and learning activities, and links to innovation-related resources. The materials developed for use in the proposed project will be shared through *The Innovation Destination* via video interviews, thinking challenges, and trigger videos.

For the library program, the team will develop a collection of 12 trigger videos featuring 18-20 of the

young innovators from grades 4 – 8 who will share experiences and advice about different aspects of the invention process. These "older" young innovators, known as the "Inventor Mentors," will serve as an inspiration to the younger children participating in the pilot program. This collection of brief trigger videos used in the eight pilot libraries will be added to the mentoring section of *The Innovation Destination* as part of the dissemination effort. The proposed project will also add 20 interviews/200 video clips with recognized K-3 inventors to the video database. Some of these interview clips will be used in conjunction with program activities providing motivating examples of inventive thinking by children in their own age range. This leverages the existing resource in exciting new ways, serving new audiences---public libraries, rural communities, and younger children--and broadening its current STEM focus to include literacy.

The Literacy-Innovation Connection. As a culminating activity of the 3-month program and with the help of their librarians, children will create digital stories individually and collectively about how they solved problems/challenges through innovative thinking, to be published on *Curiosity Creek* and accessible through *The Innovation Destination*, as previously described. This will further expand the literacy element and recognition of accomplishments using an existing project with an already developed infrastructure (for storytelling) that appeals to children. The project team will employ formative assessment throughout the program, eliciting monthly feedback from the 8 participating libraries in order to improve the program while in progress.

Types of Activities. The development of the Literacy-Innovation Connection for Rural Libraries program for this younger age group will focus on building literacy skills through real world, relevant problem-solving activities that children this age encounter at home, in the library, in school, outdoors, etc. Emphasis will be on the joy of discovery and the excitement of solving problems through librarian-created activities that include 1) divergent thinking exercises that demonstrate that problems can be solved in multiple ways, 2) open-ended thinking challenges that demonstrate such outcomes as perseverance in the face of challenge, building self-confidence, persistence on task, and learning through failure, 3) curiosity-stimulating exercises, such as "what-if" scenarios that stretch imagination and creativity, and 4) games that motivate the creative process. Where appropriate, these activities may incorporate the proposed video interviews and trigger videos to serve as role models for inspiring and informing children, particularly those from underrepresented populations, who may aspire to becoming young innovators themselves. These activities, created by a team of librarians and innovation experts and compiled into a suggested curriculum by the project director and co-director (who are both trained instructional designers), will be a valuable addition to *The Innovation Destination* resource, shared with colleagues nationwide.

The paired literary/informational book collection (to be selected in Year 1) will create a context for problem-solving activities and could include titles such as *Rosie Revere, Engineer*, the story of a young inventor with dreams of becoming a famous engineer but she experiences failure. Her great Aunt Rose (Rosie the Riveter) assures young Rosie that her invention was not a failure, and that the only failure is quitting. As children are encouraged to discuss the story through interactive read-alouds, they practice literacy skills of listening, speaking, reading, and retelling the stories exploring the setting, characters, problems, resolutions and lessons learned. Such a book could lead to a trigger video from one of our *Inventor Mentors*, a real child, who talks about how failure was just part of the process of inventing, en route to finding a solution. For example, "It doesn't really put me down [when I fail] 'cause like Thomas Edison, he found, like one thousand ways that it [light bulb] didn't work. And there's a lot of people who've just done a lot until they actually succeeded" (*Jay, 5th grader, Recognized Inventor excerpt from interview transcript, Young Innovators Project, 2017).*

Sharing Lessons Learned. Program participants (librarians facilitating the program) will engage in a virtual *community of practice* during the implementation of the program by sharing lessons learned with each other as the program is rolled out. A mechanism for this will be incorporated into *The Innovation Destination.* Later, these lessons can be harvested and shared through the mentoring section of the site.

2.3 Depicting a Theory of Change
The logic model below graphically depicts the situation the project addresses, assumptions, external factors, and how the project components will lead to project outcomes.

LOGIC MODEL: Making Literacy-Innovation Connections for Rural Libraries and their Youngest Patrons

SITUATION / NATIONAL NEED:
1) Rural communities lag behind urban and suburban counterparts in terms of economic development, 2) Rural libraries provide community support but are stretched thin due to tight budgets, staffing and time, and will benefit from additional resources to provide programming that targets community needs, 3) Children in rural communities lag behind their non-rural peers in reading achievement.

INPUTS	OUTPUTS		OUTCOMES		
	Activities	Participants	Short-term	Medium-term	Long-term
-Project team expertise -Two innovation organization partners -Eight partner libraries -Six-person Project Advisory Committee -Three-librarian design team to contribute to materials development -University staff support -Student tuition/salary support to work on project activities -Funding from IMLS -Cost sharing support from university and subcontractor -Existing infrastructure of innovation website -Existing infrastructure of Curiosity Creek site	-Project team and advisory committee meetings; program design consensus -Program development -Materials selection -K-3 innovator recruitment and video interviews -Trigger video production -Site programming -Partner library orientation -Program implementation -Ongoing Evaluation -Input/revisions -Reporting -Dissemination	(Those who benefit from inputs and program activities) Participating librarians in 8 rural communities Children participating in program Parents participating in program Librarian users of the expanded Innovation Destination web-based resource Readers of publications of program results	Knowledge and confidence gains for participating librarians Intention to provide programming after project completion (library directors) Increased motivation to engage in literacy and invention activities (participating children) Willingness to participate in family literacy time (parents) Increase use of virtual resource, *The Innovation Destination*	Participating librarians deliver the program again in the following year Families of program participants report spending more time interacting with literacy-based activities with children Publications and dissemination of program results in more rural librarians accessing the model program through website registration. Continued increase in use of web resource	(Measurement of desired long term impact is beyond the scope of this grant period but outcomes are listed below) Children enter middle school more confident about their literacy skills. Rural children are more engaged in innovation activities that will impact their own communities.

ASSUMPTIONS	EXTERNAL FACTORS
1. Rural libraries will be receptive to offering a program that integrates literacy with inventive thinking skills. 2. Parents will want their children to participate in the proposed program. 3. Some parents will embrace the family literacy program component spending time in the weekly reading-related end of program activity.	1. Some rural libraries may still find it difficult to allocate staff and time to this program even with being supplied with program materials. 2. Some parents may have difficulty with making transportation arrangements if they live in isolated areas, are working, or other reason. 3. Some parents may be resistant to the family literacy aspect of the program if they do not read well themselves.

EVALUATION PLAN:
Evaluation will be on-going throughout the project and will include both formative and summative components as detailed in Evaluation Plan.

Figure 1: Logic Model

2.4 Project Resources (Personnel, Advisors and Other Contributors, Budget, and Timeline)

Project Team. The team is fully qualified and prepared to undertake the proposed project. Together, the Project Director and co-Director have collaborated on more than two dozen successful grant-funded projects from foundations, government agencies and universities, including more than a dozen funded by IMLS. They all have designated personnel, financial and other necessary resources, including adequate, dedicated time, to fulfill the scope and scale of this project. They both possess a PhD in Instructional Design, Development and Evaluation from Syracuse University, have been working together in the area of youth innovation for more than 12 years and have been on the faculty of the highly ranked School of Information Studies at Syracuse University for a combined 40+ years.

Dr. Arnone's areas of expertise include multiple literacies, web design and video production; her research focuses on children's curiosity and inquiry-based learning. She will direct the administrative responsibilities of the proposed project, work with participating libraries to implement and evaluate the literacy-innovation program, oversee the website and video components, serve as chair of the project's advisory board, and supervise the administrative/video production project assistant. Dr. Small's areas of research and expertise include information literacy, motivation, innovation and disabilities, for which she has received two national research awards. She will work with the external partners on recruitment and participation of diverse child innovators in project videos, lead the evaluation and dissemination components of the project, serve (ex-officio) on the advisory board, and supervise the evaluation/ dissemination project assistant. Mr. Hardy, a software engineer with expertise in web development and software programming, will direct technical development of

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the web components. He has worked with the project team on numerous major funded projects over the past 20 years, including *S.O.S. for Information Literacy*, *Project ENABLE*, and *The Young Innovators Project*.

  <u>Consensus Building: The Role of Advisors and Other Contributors.</u> The project team will gain consensus on broad level program design and development decisions initially from the Project Advisory Committee (PAC) and the two innovation organization partners described earlier in the proposal. The six-person PAC will include rural public and school librarians, a nationally recognized library leader and literacy expert (letter included) and a library director who is a recognized leader in the makerspace movement (letter included). Three PAC rural librarians already selected include the public and school librarian partners from the *My Little Home Library* project (letters included) and a leader in rural libraries who is also head librarian at a midwestern rural library (letter included). With input from the PAC and the two partner organizations, an additional team of three librarians (public and school) will be selected (based on their experience in delivering literacy and innovation initiatives) to assist in the design of the specific activities for the literacy-innovation program. The PAC will continue to be called on for periodic input and reviews of the developing program initiative and will reach out to members of the Association for Rural Library Services and to the Association for Children's Library Services to help in the selection of the remaining rural public libraries to help in balancing program participation from rural fringe, distant, and remote libraries. Critically important will be the feedback from the library partners during the implementation of the program both formally through evaluation and informally through their community of practice sharing with each other discussed in Section 2.2. Taken together, the project team will have the support and input from 19 individuals representing key stakeholders and partners with the knowledge and experience in the areas that will impact potential project success. All will receive stipends for their participation.

  <u>Additional Project Support.</u> The Syracuse iSchool's research administrator and clerical staff will also support the project team. Additionally, a graduate student will assist Drs. Arnone and Small in project tasks related to planning and preparation of video elements and evaluation activities. The student will receive tuition support and receive compensation for 20 hours of work per week during the academic school year.

  <u>Project Budget.</u> The budget includes support for the project directors (1.5 months in the summer for 2 years), the technical director and programmers, tuition support and salary for a graduate student for the academic year, stipends for the two innovation organizations, honoraria for PAC members, stipends for three librarians to contribute to the design of program materials, stipends for the eight rural librarians to implement the program, purchase of the paired literary/informational books for the participating rural libraries, a small budget for library supplies, and print materials and postage for the delivery of the program. A detailed budget breakdown and justification is included in the supporting documents.

  <u>Timeline.</u> A top-level timeline is included in the table below while a Schedule of Completion detailing all the project tasks can be found in a separate document labeled *Schedule of Completion*.

Table 1: Top Level Timeline

PHASE 1	PHASE 2	PHASE 3	PHASE 4
Research and Design 12/2018 -3/2019	Development and Formative Evaluation 4/2019 -8/2019	Implementation and Formative Evaluation 9/2019 - 6-2020	Evaluation & Dissemination 7/2020 -11/2020
-Start-up meetings with key stakeholders, partners, PAC, librarians -Design draft of after-school program -Select K-3 innovators -Select team of librarian designers -Design work with librarians -Select book titles	-Final design document for program -Develop program materials, videos, web programming -Beta test materials (technical) and garner input from PAC, partner organizations, pilot library librarians; Revise --Program orientation for all partner libraries	-Implement project in <u>3 rural libraries in Fall 2019</u> -Collect formative evaluation data via librarian journals, sharing space for librarians -Re-iterate program based on feedback in Fall -Implement project in <u>5 rural libraries in Spring 2020</u> -Collect formative evaluation	-Conduct outcome based evaluation with all participants -Make final program changes, if necessary. -Report -Add all program materials to Young Innovators Project Resource -Disseminate findings and promote the program availability to the library profession

2.5 Communication Plan

An active dissemination effort, during and even *beyond* the funding period, is critical for the success of this project in order to assure that project information continues to be available to library professionals, parents and the young innovators, themselves. As the project directors have strong publication records and have presented often at professional library and education conferences, they have an established track record of successful dissemination efforts for their funded projects. For example, as a result of its communication efforts over the past five years, more than 10,000 librarians, pre-service librarians, and teachers worldwide have registered for the *Project ENABLE* comprehensive training on library services to people with disabilities. They also have frequently included project participants as co-presenters at professional conferences and co-authors of professional publications. For example, the project leaders' AASL co-presentation of the launch of *The Innovation Destination* included five librarians who participated in the project as mentor-librarians, resulting in more than 5,000 visitors to the site in its first month.

The dissemination of information for the proposed project includes the use of a wide variety of communication channels. Information about the proposed project and its outcomes will be disseminated through (1) articles in professional journals for library practitioners and teachers [e.g., *Children and Libraries, American Libraries, Public Libraries*], (2) presentations at professional library association conferences (e.g., PLA, ARSL, ALSC), (3) blog posts, including selected project participants and partners as guest bloggers on the project website's bi-monthly blog; and (4) reports, announcements, white papers via the Center for Digital Literacy and Syracuse University web sites, broadcast and social media (Twitter, Facebook), local and state librarian e-newsletters, and e-newsletters of innovator organizations. *The Innovation Destination* site will continue to be freely accessible through its own URL and the *Curiosity Creek* site and promoted through project partners and participants.

2.6 Sustainability Strategy

Strategically situating this project within *The Innovation Destination* website, with mutual links to the *Curiosity Creek* site and allowing the project team to house this project with other highly successful and popular IMLS-funded, CDL-developed web resources, such as *Project ENABLE* and *S.O.S. for Information Literacy*, ensures sustainability for all projects. The proposed extended version of *The Innovation Destination* website, with its unique, innovative, searchable video database resource database and other relevant materials, adds to the variety of resources available to librarians and others to support youth innovation activities in libraries, schools, recreational facilities, and homes. The collection of STEM and literacy-related, standards-based teaching/learning resources enhances this project's potential usage base. The project directors have enjoyed 20 years of successful collaboration with Mr. Hardy, who maintains the technical quality of *Project ENABLE*, *S.O.S.* and other CDL projects and will oversee the technical development of this project, ensuring the website is properly updated and maintained into the future.

2.7 Overview of Evaluation Plan

Both the Project Director and co-Director are experts in the area of evaluation and share the philosophy that evaluation is critical to the ongoing development and improvement of high quality library programs and services by providing evidence of success and understanding how to turn any failures into successes.

Dr. Small will lead the project evaluation effort, collecting data throughout the 2-year grant period (and beyond). With assistance from the participating librarians, iterative, formative data will be collected from all participating librarians, children, and parents during the project, including transcription and analysis of video interviews and evaluation (through observations and questioning) of effects of trigger videos and other elements of the project on participating children's attitudes and behaviors in the areas of literacy and innovation. Furthermore, we will stagger program implementation with 3 libraries in the fall and the remaining 5 in the spring. These types of iterative data collection allow the project team to make changes and improvements *while the project is still in-progress*. Summative evaluation data will be collected using pilot-tested instruments (questionnaires, journals, observations, interviews), to determine if project goals have been achieved. Web analytics will be performed to assess amount of usage and usage patterns of the project's web components. A detailed outcome-based evaluation plan can be found under Section 4: National Impact.

3.0 DIVERSITY PLAN

The proposed project's team has a long history of working successfully with partner youth innovation organizations and libraries to achieve a broad diversity of participation (racial, ethnic, gender, ability and economic) across all project components. The team will continue to seek a level of broad diversity through its recruitment of participants as advisors (PAC), participating library program families, and child video participants. Library program participants, representing a variety of types of rural public libraries (fringe, distant, remote) from diverse U.S. geographic areas will be recruited/selected to test the model. The project targets rural libraries, often situated in economically underserved communities that typically have lower than average employment and economic diversity, as well as a high incidence of at-risk children.

The after-school program activities will also promote diversity. For example, diversity will be addressed through the selection of books for the paired literary/informational book collection that will be used in the program and permanently added to the children's book collection at each participating library; books will include characters and inventors from different cultures, backgrounds, and geographic locations within the United States. We will make an effort to highlight individuals from rural communities who have gone on to solve problems that have made a difference in their community and for communities like theirs. Rural children will see their own potential through role models with whom they can identify.

4.0 NATIONAL IMPACT

The proposed project addresses the IMLS agency-level goal of inspiring libraries to advance innovation and encourages children to think creatively to solve problems in their local communities while promoting literacy skills. The International Literacy Association (2018) engaged in a three-phase study that included 26 literacy experts, an online focus group, and finally a survey of with 2,097 participants and concluded that equity in literacy education ranked #2 in importance by respondents and access to books and content ranked #5 in importance. Equity was defined in the study as "ensuring all children get what they need not only in situations of poverty and limited resources but also regardless of academic proficiency, geographic remoteness, and any other barrier to school success" (p. 11). Rural communities often represent geographic remoteness and are resource-limited settings where improving literacy and innovativeness is critical to future economic growth in these areas. The proposed program can contribute to change by providing rural children with more tools for academic and future career success.

Scalability. The active dissemination effort to distribute the project findings outlined in Section 2.5 and the existence of the *Young Innovators Project* platform with which to distribute program materials nationally strengthens the potential for the pilot project to be implemented on a large scale across all states in the nation.

Adaptability. While the pilot project specifically targets rural public libraries to help cultivate innovators in rural areas, the literacy-innovation connections program can be easily adapted to serve rural school libraries and also suburban and urban public and school libraries. The innovation process is the same regardless of where the process takes place and the literacy connection strengthens the program initiative wherever it is offered.

Maintaining the Digital Content. The project team has had a successful record of preserving and maintaining the digital content created for each of the projects undertaken. For example, the *SOS for Information Literacy* project has existed for almost 20 years with regular updates to preserve its content. A *Digital Forms* for the proposed project has been completed and is included in this application.

A Plan for Measuring Success. The project will use an outcome-based evaluation method to track success of the project. Methods used by evaluators and librarians will include interviews, surveys, questionnaires and observation checklists (using piloted protocols) and electronic journals (kept by the 8 participating librarians over 3-month period), The technical goals and project outcomes were defined in the Project Design Section 2.1. Below, the outcomes will be further delineated with specific performance indicators, data collection methods and intervals, and criteria for judgment of success.

Table 2. Evaluation Plan: Outcomes, Indicators, Data Source, Data Intervals, Goal/Target.

<u>**Outcome #1:**</u> Participating librarians will gain both knowledge and confidence in providing innovation-literacy connections for their young patrons.

Indicators	Data Source	Data Intervals	Goal/Target
After implementing the program materials to deliver the after-school program, librarians will report: 1. Knowledge gains in making connections for their patrons between literacy and inventive thinking. 2. Increased confidence in their ability to provide literacy-innovation thinking activities to students.	-Journal entries at different points in program -Interviews -Observations of community of practice interactions	-Before and during program; at conclusion of program -Before program and at conclusion of program -Once per week during program	- At 75% of participating librarians will note knowledge gains pre and post program participation (Indicator 1) -At least 75% of participating librarians note differences in confidence pre and post program participation (Indicator 2)

<u>**Outcome #2:**</u> Participating libraries (directors and librarians/program facilitators) will report an intention to offer the program again in their communities.

Indicators	Data Source	Data Intervals	Goal/Target
1. As a result of program participation and results for their patrons, librarians will report desire to repeat the program again. 2. Given positive results for librarians and patrons, participating library directors will indicate support for continuation of the program beyond the grant.	-Interviews -Email correspondence with library directors	-Conclusion of program- -Conclusion of program	-At least 75% of participating librarians (Indicator 1) -At least 75% of library directors (Indicator 2)

<u>**Outcome #3:**</u> Children participating in the after-school program will demonstrate increased knowledge and motivation to engage in literacy and invention activities.

Indicators	Data Source	Data Intervals	Goal/Target
1. Child participants will demonstrate improvement in literacy and inventive thinking skills as a result of continuing program participation. 2. Children will be able to relate literary and informational texts to creative problem-solving challenges, some involving their local community and/or daily life. 3. Children will be motivated to share their innovative ideas through their digital stories published on Curiosity Creek.	-Observations by participating librarians -Questioning by participating librarians during program Curiosity Creek published stories	-During program -Submitted in years 1 & 2 of the grant -Submitted in years 1 & 2 of the grant	-Steady improvement over program duration (Indicator 1) -At least 70% of children (Indicator 2) -At least 70% of child participants will choose to share their stories

<u>**Outcome #4:**</u> Parents will spend more time in literacy-based activities with children and report gains.

Indicators	Data Source	Data Intervals	Goal/Target
1. Librarians will report witnessing increased parent-child interactions in library 2. Parents will report increased literacy-based activities with children in the home and report literacy improvement.	-Observations by participating librarians -Parent survey	-During program - At conclusion of program and three months afterwards	- At least 25% more interaction witnessed than before program -At least 75% of parents will report "more" or "much more" literacy-based interactions

<u>**Outcome #5:**</u> There will be an increase in the use of and satisfaction with *The Innovation Destination* resource by site visitors. (Medium Term)

Indicators	Data Source	Data Intervals	Goal/Target
After reviewing and using *The Innovation Destination*, visiting librarians will report: 1. Intention to use program materials to help mentor innovation in children. 2. Satisfaction with quality of materials	-Brief site questionnaire embedded within mentor training	-One time at conclusion of site visit; timing dependent on visitor accessing site	- At least 50% of librarians report intent to use materials - At least 75% report they are "satisfied" or "very satisfied" with quality of materials.

SCHEDULE OF COMPLETION
Making the Literacy-Innovation Connection for Rural Public Libraries
DURATION: 2 YEARS

Dec. 2018 — **Nov. 2020**

MAJOR ACTIVITIES AND MILESTONES	Dec/Jan	Feb/Mar	Apr/May	June/Jul	Aug/Sept	Oct/Nov	Dec/Jan	Feb/Mar	Apr/May	Jun/July	Aug/Sept	Oct/Nov
Startup meetings w/ PAC, library partners, project team *(including select 3-Librarian Design Team, final PAC member)*	█											
Select/record/edit K-3 recognized inventors (interviews) *(including revisiting IRB approvals, consents, etc.)*	█	█	█									
Design draft of three-month after-school program		█	█									
Select literary/ informational paired book titles		█										
Develop/pilot test detailed plans/measures for OBE data collection *(plus formative evaluation of all materials during development and after)*		█	█	█	█	█	█	█	█			
Share program design documents with PAC/partners for feedback			█									
Revise program based on iterative feedback				█								
Final program design				△ Program Design Complete								
Write/produce/edit 12 trigger videos for program and TID *(including closed captioning and data/media entry into TID)*			█									
Develop all web components, beta test, solicit feedback *(Input from PAC, innovation partner orgs, library partners)*	█	█	█	△ Technical Development Complete								
Conduct program orientation for all library partners *(Orientation through webinar and asynchronous interactions)*					█							
Carry out final preparations for first program pilot *(includes librarians gathering consents, materials delivery, etc.)*					█							
Conduct program pilot #1 with first 3 rural libraries					Pilot #1 █	█	△ Pilot 1 Complete					
Conduct formative evaluation *(incl. observing community of practice interactions)*					█	█	△ IMLS Interim Report Due					
Make necessary program moderations based on pilot #1							█					
Conduct program pilot #2 with 5 more libraries								Pilot #2 █	△ Pilot 2 Complete			
Conduct formative evaluation *(incl. observing community of practice interactions)*								█	█			
Execute final phase of OBE plan with all participants/Prepare results *(generate recommendations for practice)*									█	█	△ OBE Complete	
Share results with PAC, partners; gather input for dissemination											█	
Prepare conference papers/journal articles for submission *(and implement other identified dissemination strategies)*										Dissemination continues beyond end date ➤		
Prepare/Submit FINAL IMLS Report											Final Report △	

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
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.

All products created for this project including published research, lesson plans, and videoclips will be publicly available for use and sharing using a non-restrictive license that provides credit to the project and to the individuals who created the lesson plans and materials made available. To make this clear to users, a statement will appear on the web resource that reads "This work is licensed under a Creative Commons Attribution 4.0 International License." This license provides users with the permission to to share and adapt content as long as attribution is provided. No additional restrictions will apply.

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.

As the developer of the resource, the Center for Digital Literacy and School of Information Studies at Syracuse University will need to protect access to the resource on an administrative level, that is, the programming/coding and maintenance of "The Innovation Destination" (TID) online resource will not be accessible by users. This is necessary in order to protect the physical integrity of the resource. However, all content will be readily accessible to users without restrictions. Potential users of the resources will be notified via publications, announcements on the Center for Digital Literacy website, the TID resource, the iSchool, and social media outlets of Syracuse University and the iSchool.

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.

Yes, producing the 200 K-3 interview clips will involve minors as well as the 12 trigger videos that will be produced. After identifying potential young innovators, a request will be sent to the parents or guardians requesting permission for their child(ren) to participate in recorded interviews and for those interviews to be disseminated via the TID resource. A standard permission / video release provided by the School of Information Studies will be used and a parent/guardian signature required. Parent/Guardians will be given the option to scan/email the permissions to the project team or use standard postal mail to return them. No recordings will begin without such permission. Additionally, the child will be asked verbally prior to recording the interview if they wish to participate and given the option of withdrawing if they choose. We will not be asking or publishing information about children that would be considered private. Only first names of children and state where they reside will be used. For the completed document of the Innovation-Connections program to be published in the mentoring section of the TID resource, contributors are paid a stipend and will be acknowledged on the documentation.

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.

There will be approximately 20 video interviews with young K-3 innovators recorded and 12 trigger videos with 18-20 grade 4 - 8 "Inventor Mentors". Each K - 3 interview will consist of 7 - 10 interview questions which will later be edited into separate videos searchable by question type and content. This will result in a total quantity of approximately 200 searchable videos plus the 12 trigger videos accessible in the mentoring section of the resource. These will be saved in H.264 format which is explained in greater detail in Section C.2. These videos will be created as new (original) interviews.

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.

These videos will be recorded over the internet using a video recording internet application which has been tested and utilized by the Co-PIs and determined to deliver adequate quality video when remote lighting conditions were sufficient. The software is Skype Call Recorder. Should a newer version or even higher quality software become available by the time this project is funded, it will be tested and considered as the recording application. The videos will then be logged by question type, edited on a Macintosh work station using Adobe Software, Creative Suite. The project team and no outside service provider will perform the work. The videos that are recorded will be edited and saved in H.264 format at 29.9 frames per second. They will compressed for web delivery and we expect web delivery pixel dimensions to be 720 X 480.

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).

The video interview clips will be saved as MP4 files and edited masters will be stored in permanent archive at full HD video resolution and quality. Web video files will be delivered at approximately 720 X 480 pixel dimensions at 29.9 frames per second.

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 Project Director is an experienced media producer and video editor who will supervise production and also contribute to production herself. All final videos will be compressed for web delivery. All master files will be stored in a secure archive. A technical director will supervise all coding for the TID resource and the expansion of the mentoring section of the site, the mechanism for the 8 partner libraries to share experiences in a community of practice, and the addition of a tool on the Curiosity Creek site to allow participating librarians to manage their young patrons in publishing their digital stories about their innovations. The quality control plan includes regular meetings with the project team, beta testing code as developed, and providing advisory groups with opportunities to review and provide formative feedback during the development phase.

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).

The Center for Digital Literacy has successfully maintained all sites created to date with funding from IMLS for more than 15 years. The TID resource addressed in the current proposal and launched in 2017 continues to be monitored on a regular basis. The additional features to that resource (i.e.,200 video clips, 12 trigger videos plus expansion of the mentoring section for the rural innovation-literacy connections program will become part of this data center. The Center For Digital Literacy will continue to preserve this valuable asset. The technical documentation is part of the site programming infrastructure. The Center has a proven track record with past IMLS and other grants of sustaining the staffing and funding to continue projects for years following the end of grant periods.

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 resources created by the Center for Digital Literacy have traditionally been Dublin Core Metadata Initiative (DCMI) compliant and these additional resources will be, as well. Dublin Core compliance options are integrated into the site categorization infrastructure.

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

Going forward, we plan to to continue the strategy of utilizing Dublin Core Standards as its initial infrastructure was built on these standards and we have been able to successfully maintain the site using these standards. In terms of preserving and maintaining metadata created during the proposed grant's award period, we offer our track record of being able to successfully maintain projects funded by IMLS well after the initial grant periods ended. Examples include S.O.S. for Information Literacy (continuing to operate after 10 years after funding), and Project ENABLE. We anticipate being able to continue this successful maintenance including collection of metadata both during and after the proposed grant period.

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).

We will insure widespread discovery and use of the digital content and assets by making sure that each video and page of the resource which includes a digital object such as a video or relevant document is properly tagged with descriptive information so that it readily appears in a search of possible user terms when seeking information.

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).

The digital content on TID will be freely available on the web resource and accessed by standard modern web browsers. The site was built to accommodate multiple platforms and browsers. No special tools or software will be required.

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.

http://naturebooklist.org
http://projectenable.syr.edu
http://informationliteracy.org
http://curiositycreek.com
http://healthytransitionsny.org

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.

The software allows users to search and retrieve video interview segments with young innovators (called "KidsClips"), resources, links to lesson plans and learning activities, the mentoring guidelines and strategies for librarians, pathfinders to useful resources, librarian-teacher collaboration strategies, as well as links to relevant Web sites.

The intended audiences for this project include librarians, educators, students, and potentially parents of children working on innovation projects.

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.

The requirement is to have an integrated solution that is embedded within the existing infrastructure of the TID resource and so there is not another option.

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.

The CMS is built with PHP and MySQL using OO (Object Oriented) PHP. The reason for this is that with software engineering, Model–View–Controller (MVC) is an architectural pattern that splits interactions between users and applications into three roles: the Model (business logic), the View (user interface), and the Controller (user input). This separation facilitates the independent development, testing, and maintenance of each role. This is integrated into the site plan from the beginning and was not an add on.

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

The core development is using MSQL to store all components of data. SInce data is stored in an evironment that allows for an interchange of data as both an export, import and connecting to API or external data sources is possible as directed.

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

Software is optimized to run as a web service, and will require a standard web delivery host that supports Linux, Apache server, MSQL, and PHP.. often referred to as LAMP. All access to view and manage data will be via incorporated content management options.

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

All documentation is developed within the structured CodeIgnitor framework. In addition all code is managed and documented within an online code depository. The solution has an integrated HELP and FAQ section that allows admin users to maintain help screens and help vides.

B.5 Provide the name(s) and URL(s) for examples of any previous software your organization has created.

http://naturebooklist.org
http://projectenable.syr.edu
http://informationliteracy.org
http://curiositycreek.com
http://healthytransitionsny.org

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.

We will make the software code available through Github.com which is the repository we use for all source code. This will be available through the BSD free software license with no restrictions about how the software can be redistributed with attribution to the developers for the original code used.

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

The site code and development protocols will be available and accessible by other programmers and researchers. While the project team expects attribution for the work it has accomplished as clarified in Part 1 - A in bringing the resource to fruition, no further ownership rights will be asserted.

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

Name of publicly accessible source code repository:Github

URL:Github.com

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.

We will collect data on the users of the mentoring part of the TID resource through registration. This is necessary in order to allow users to sequence their training, pick up a session where they left off and track their progress. In conjunction with this function, we will collect information about the type of library in which the user works, location, certifications, and other information which the project directors may use in aggregate form in order to describe the users of the resource. It will not be necessary to collect information on users who simply wish to search for resources on the site.

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?

In order to interview the new young innovators in grades K-3, we will be required to secure IRB approval from Syracuse University. We have a current IRB approval in effect until November 2018 for the Young Innovators Project for grades 4 - 8 which resulted in the development of TID. Thus, we will apply to the IRB for extension to conduct the additional interviews and also for approval of the evaluation measures for the evaluation of the library program in eight libraries.

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).

We will not collect personally identifiable information such as last names, phone numbers, email addresses of children participating in the program or of their parents. We will ask the participating librarians to remove PII from any questionnaires sent to the project team as part of the evaluation effort.

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.

Parental permission will be collected for any minors participating in the proposed project. The consent form will advise parents that data collected will also be used for research and evaluation purposes. All consent agreements will be in electronic form and stored with data on the PI's computer.

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).

Surveys and interviews will be conducted. An online survey tool, used frequently by the PI and co-PI for research and evaluation projects, will be used to collect survey data. Interviews will be collected via Skype recording and email. The Innovation Destination site will automatically collect site statistics. Additionally, the 8 librarians will participate in an electronic community of sharing during the implementation of the project and the project director and co-director will serve as participant-observers. Librarians will be made aware of the participant-observer status of the project directors.

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?

As this project requires an evaluation as opposed to basic research, we will plan to summarize the results from our measures such as questionnaires and interviews but will not have the need for codebooks in which variables are categorized for later analysis. All information will be stored on the project director's computer.

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

All data will be stored on the project director's computer so that it will be easily accessed, managed and disseminated after completion of the evaluation.

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

Name of repository: Administrative area of the Center for Digital Literacy site

URL: http://digital-literacy.syr.edu/

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

The data management plan will be reviewed monthly during the project and quarterly following the completion of the project. The project director will monitor the implementation.