



LAURA BUSH 21st CENTURY LIBRARIAN PROGRAM

Sample Application RE-259037-OLS-25
Project Category: Community-Centered Implementation

Florida State University (FSU Libraries)

Amount awarded by IMLS: \$86,688

Florida State University will help bridge the data literacy gap young adults face as they transition from high school to an increasingly data-driven world. The project will leverage an existing FSU Libraries Data Fellowship Program that supports data literacy for university students and scale and adapt the program to develop and deliver data literacy workshops for high school and community college students. Project activities include: assessing the current data literacy landscape in local high school and community college students; partnering with local high schools and the local community college to provide data literacy opportunities for students; designing and delivering data literacy trainings and workshops for local high-school and community college students; offering educational and data training opportunities for school librarians and educators for fostering sustainable data literacy practices; assessing the impact of those trainings on students'™ data knowledge and skills; and sharing the training material and other resources openly for others through a project website. This initiative will address local community needs through partnerships with local high schools and community colleges, offering engagement and training to foster community-wide data literacy.

Attached are the following components excerpted from the original application.

- Narrative
- Schedule of completion

When preparing an application for the next deadline, be sure to follow the instructions in the most recent Notice of Funding Opportunity for the grant program to which you are applying.

Narrative

Project Title: Bridging the data literacy gap through data literacy education

Introduction

Florida State University, in collaboration with local high schools in Tallahassee (Lincoln High School, enrollment= 1860) and Tallahassee State College (enrollment = 11,714), seeks \$ **86,688** for a 2-year Community Centered Implementation Grant (LB-21) which will provide data-intensive educational training materials and other interactive learning opportunities to students in the Tallahassee community. The project also seeks to investigate the impact of data training on users' data awareness and understanding of data and its context within society. The goal of this project is to provide training and educational opportunities as well as educational support focusing on data literacy to high school and community college students in the Tallahassee community. This will be done through the development of learning materials and learning opportunities and designing and delivering trainings that fit students' specific data literacy needs.

This project supports community data education by adapting the existing practices of a well-established and effective data fellowship program at Florida State University Libraries, to meet shared and similar learning needs in the local community. The project intends to fill data literacy gaps for students before they pursue careers or college and prepare them for data-intensive college majors and career opportunities. The results from the study will be used to design and develop reports, research designs, workplans, and training materials that promote critical data literacy. This work will be conducted with a transparent and reproducible approach that will enable it to be scaled, adjusted, and adopted across communities of varying sizes, demographics, and learning needs.

Project Justification

Goal alignment: This proposed project aligns with IMLS Program agency level **Goal 2: Strengthen Community Engagement** **Objective 2.2:** Support community collaboration and foster civic discourse and **LB21** program **Goal 2, Objective 2.1** Develop or enhance professional development and training programs to enable the library and archival workforce to meet the needs of their communities.

Data Literacy is a crucial skill that includes reading, writing, numerical, and graphical information literacy and extends to understanding, manipulating, and analyzing data. It also includes understanding where data comes from, how it fits in a larger context, recognizing when data is misleading, and knowing how to use data to tell a story. Data literacy is important because it improves critical thinking, decision-making and problem-solving in real world scenarios. When working towards data literacy, educators and scholars often fail to recognize the important relationship between the user, the creator, and the data itself. This causes setbacks for learners, especially when they encounter 'real-world' or job-related encounters that require data literacy (Gebe, 2022), such as making healthcare decisions, planning a budget, making a significant purchase, data sharing and privacy associated with services, or voting. Unfortunately, there are few systems in place to teach data literacy as part of the K-12 curriculum. Furthermore, as new technologies emerge and the volume of data produced continues to increase, the gap in data literacy training becomes more apparent. (Forbes Council, 2019, para 1)

These examples suggest a need for a local and context-centered approach to teaching data literacy, one that emphasizes context specific circumstances such as how data is generated and encountered and what its purpose is. This is a step away from more traditional, and arguably, less effective methods of high-touch data instruction. Existing methods often include context-free strategies or, one size fits all, models that fail to take differing learning needs into consideration. (Gebe, 2022) Furthermore, the data literacy gap is not only evident in the academy but also exists in the private and corporate sector. To stay competitive, businesses are increasingly looking for graduates with data literacy skills, as these skills are imperative to business value creation. (Johnson, 2019) **This project aims to build and deliver data literacy learning materials that teach the technical skills necessary to succeed in today's classroom and workplace while integrating contextual aspects of data literacy to bridge the gap between knowledge and understanding.**

Although public libraries have contributed to enhancing specific literacies within many communities—often in collaboration with local organizations, data literacy programs are not as common or established in community colleges and K-12 schools. Despite this gap, there are some examples to draw from. The City Digits project, a collaboration between MIT's Civic Data Design Lab and CUNY's Brooklyn College, focused on developing new tools to help improve data literacy among Brooklyn high school students and help them use data to investigate their local environment. (Civic Data Design Lab, n.d.)

FSU Libraries has an established Data Fellowship (fellows) Program that focuses on peer-to-peer instruction, consultation, and student outreach. This program was conceptualized from broader strategic planning efforts in FSU Libraries that were aimed at supporting undergraduate students. (Ruhs, 2024) Through the fellows program, in addition to efforts led by data and research librarians, FSU Libraries offers a wide variety of programs and events that have been working to advance data literacy competencies for students and even faculty. Workshops and other learning opportunities that have recently been offered by librarians or the data fellows include data analysis in tools such as SPSS, SAS, MATLAB and other software as well as qualitative data analysis with tools like NVIVO. In addition to data visualization and analysis training, FSU Libraries also teaches more nuanced aspects of data literacy such as privacy, management, and ethical reuse. The data fellows have had success engaging with the FSU students and faculty through outreach and events, including symposia on emerging topics like generative AI use in education.

The data fellows program enables peer-to-peer learning opportunities through student-led data literacy workshops, consultative research support, and hands-on training opportunities for FSU students and faculty. This peer-to-peer learning environment has proven to be a successful element in library programming. This program has been a critical component in the data literacy efforts on the FSU campus and was included in the Institutional Effectiveness Program (IEP). **Inspired by the success of the fellows' program, this proposal aims to broaden the scope and extend this program into the local community by taking custom approaches and strategies while delivering equally high-quality educational opportunities to community college and high school students. The curriculum produced as part of this project will introduce foundational, grade-appropriate concepts to students that detail how data is produced and analyzed, in addition to learning how to use the tools needed to work with data.**

Recently, FSU went through its decennial accreditation process with the Southern Association of Colleges and Schools (SACS.) To prepare for this process, the university surveyed graduate students at FSU to

determine what challenges they faced and what gaps were present in their educational experience. The survey findings revealed that graduate students faced data education and literacy challenges and that there was a need for additional data literacy support and trainings. The university tried to address those challenges by building a robust data literacy initiative as a part of the Quality Enhancement Plan (QEP). While the QEP workshops and several others are geared towards graduate student learning needs, they are meant to address deficiencies and gaps that should have been addressed through prior educational experiences. Furthermore, most of the data visualization and analysis workshops offered by FSU Libraries provide foundational skills that close gaps for undergraduate students and these gaps, like others identified in this proposal, could have been addressed before attending FSU.

Equipping high school and community college students with data management and data literacy skills and providing data-intensive training will work to address many of these challenges and help them throughout their careers and everyday life. Local community colleges and high schools are a natural down-stream conduit toward FSU, which provides more incentive to expand the data fellow program into our community and create a design that can be adapted and used in other communities to close similar learning gaps.

This project will bring together the appropriate team members and stakeholders, including community college and high school instructors and students, to address the following challenges and answer the following questions.

- 1) What is the current landscape for data literacy learning opportunities and perceived data literacy levels for high-school and community college students, and how well does this prepare them for school or a career?
- 2) How can interventions from academic libraries, in partnership with academic organizations, foster and promote community data literacy and engagement in their local communities?
- 3) What are the potential opportunities and challenges associated with sustaining data literacy training in these organizations?

Project Work Plan

Project Team:

Nicholas Ruhs: Dr. Ruhs is the Project Director (PI) who holds a Ph.D. in chemistry and has expertise in data management, trainings and consultations. Dr. Ruhs is currently serving as Research Data Management Librarian at FSU and is the Data Fellow Program Supervisor and mentor. Dr. Ruhs has worked with the data fellows to deliver data literacy trainings as part of the library's Data @ Your Desk workshop series. Dr. Ruhs will be supervising the project data fellows and will oversee needs assessment, training development and delivery, and data collection and analysis.

Renaine Julian (Co-PI): Julian has a master's in library and information science and an M.S. in Urban and Regional Planning. Julian is currently the Head of Academic Liaison Programs & Services at Florida State University, and his research areas include open research and information behavior. Julian will support the project by participating in curriculum review and training development, as well as providing consultation throughout the project.

Neelam Bharti (Co-PI): Dr Bharti holds a Ph.D. in bio-organic chemistry and is serving as the Associate Dean for Research and Learning Services at Florida State University Libraries. Dr. Bharti's expertise

includes data literacy and community engagement practices. will support the project by participating in curriculum review and training development, as well as providing consultation throughout the project.

Project Goals:

The goals for this project are to:

- Assess the current data literacy landscape in local high school and community college students
- Partner with local high schools and the local community college to provide data literacy opportunities for students
- Design and deliver data literacy trainings and workshops for local high-school and community college students
- Provide educational and data training opportunities for school educators and instructors for fostering sustainable data literacy practices
- Assess the impact of those trainings on students' data knowledge and skills
- Share the training material and other resources openly for others using Open Science Framework and build a **CreateFSU** website for grant material and resources hosting. Create FSU is a platform for scholars to collaborate across disciplines and share their work with the world. (createFSU, n.d.)

Project plan: The project team has already identified collaborators at the local high schools and community college (support letters attached). This project will be executed in four phases to achieve the intended goals.

Phase 1: Needs Assessment and Hiring (August 2025- February 2026)- At the beginning of August 2025, the project team will start hiring data fellows and drafting the needs assessment plan. The data fellows are students who work part-time in the Libraries. The hiring process would be streamlined given that FSU Libraries has an established OPS hiring process. Students will be interviewed and data fellows will be hired during the beginning and middle of August 2025. The data fellows will support the needs assessment by assisting with survey design and conducting focus groups/interviews, as well as data compilation and analysis. The fellows will also support curriculum development, design learning outcomes based on assessment results, and program planning all under the leadership of the Project Director. A needs assessment and environmental scan will be conducted using a combination of quantitative and qualitative strategies, including survey research, focus groups, and semi-structured interviews, to better understand data literacy skills and perceptions in local high schools and community college in the Tallahassee community. This assessment includes learning more about attitudes towards data literacy and perceived levels of data literacy competency by engaging with participants such as high school and community college students, high school and community college instructors, instructional designers, and support staff in Tallahassee. Information gathering activities will also include examining current data education resources, available trainings and learning opportunities, known gaps and documented unmet needs. This will include activities that enable the team to learn more about what students, educators, and the community would like to see included in this curriculum, as well as explore scaling opportunities for students at various learning levels.

The needs assessment will also measure levels of data awareness, and data understanding for students and educators in the societal context at high schools in Tallahassee and the community college, Tallahassee State College. The research team will conduct appropriate statistical methods, such as power analyses

and reviewing similar qualitative studies to determine appropriate size for focus groups or semi-structured interview participants. The needs assessment instrument and survey questions will be reviewed by the FSU IRB and minor students that are recruited will be required to provide parental consent, in addition to their own consent, to participate in focus groups, interviews, complete questionnaires, or other research activities.

While this proposal outlines several qualitative methods, in addition to survey research as proposed methods for assessing factors associated with data literacy education, the project team will choose approximately two methods, likely including survey research. This will ensure that the team is focusing on the most important factors within the most important stakeholders for this study, while meeting the timeline established in this proposal. Appropriate data analysis techniques will be utilized depending on which methodologies are pursued. Methodological selection will be guided through consultation with information scientists in the project team's network, consulting the literature, and relying on previous research experience. All project plans, including methodology descriptions, data analysis plans, and related information will be made publicly available when possible but not no later than the completion of the project lifecycle.

Phase 2: Program development (Jan 2026-May 2026)- The project team will analyze and use the results from the needs assessment to identify data literacy learning gaps and areas to prioritize developing learning materials. The assessment results will be used for designing learning outcomes as well as designing initial course materials. Assessment data and reports will be used to facilitate the creation of a pilot group of community college and school instructors to get initial feedback on training development and curriculum needs. Educators and other stakeholders will be identified and recruited to participate in the pilot and advisory group. This group will review study and curriculum designs, *as well as* provide feedback on the overall progress and direction of the project.

Reports and other aggregate information related to these assessment and research activities will be made publicly available through the dissemination of scholarly works and deposit into repositories and preprint servers such as FSU's research repository and LIS Archive.

The project team members, including the data fellows, will review the curriculum needs and level and divide curriculum development tasks according to their specialties. Gaps in skills and specializations will be documented so that team members can identify and recruit instructors and collaborators who may be able to fill these gaps. The first draft of learning materials will be designed around the existing skills and specializations of the project team and data fellows but these skill gaps will be filled through teaching and creating instructional materials over the lifecycle of the project with instructors and collaborators. Once the first round of instructional materials has been designed and piloted, the project team members will connect with other professional networks outside FSU, including universities that have done similar community involvement work, for curriculum review. This network will also be leveraged for any potential resource allocation, project feedback, and other valuable contributions that may advance this work.

The project team will develop curricula that is responsive to the needs of the target groups and will share curriculum drafts with these groups for their review and feedback. All final curriculum and training versions will be labeled appropriately and be hosted and made publicly available on resources such as the Open Science Framework and a CreateFSU webpage.

This phase will also include developing a post-training assessment framework to assess and evaluate the learning outcomes. This will be done through multiple methods including pre-post test surveys during workshops to test learning outcomes and related outcomes. The program team will also develop facilitator guides for instructors that prepare them to teach and deliver data trainings. These materials will be publicly available for anyone that would be interested in continuing to teach data literacy trainings at their schools upon completion of the project.

Phase 3: Program delivery (June 2026-April 2027): The project team and data fellows will reach out to the high school and community college to work on logistics and scheduling. This includes working with Tallahassee State College and other partners to reserve space for classroom instruction. The project team will focus on providing trainings that will be conducted online as well as in-person, to maximize student participation. To alleviate comfort needs, better enable students to focus on their instruction, and to incentivize students' attendance, the project team will provide food and drink at in-person trainings and workshops. Additionally, the project team will work with school administrators and teachers on finding ways to provide other incentives, such as extra credit for participants.

To make the community aware of these events and to enable the community to leverage these educational resources, the project team will design a registration webpage for the participants with information about in-person locations or Zoom addresses for the trainings, as well as basic expectations for the training sessions. The team plans on delivering the trainings to 200-300 students. The team will also engage with community partners to explore if there would be opportunities to deliver the workshops for the community at the local libraries or educational institutions beyond those the group is already in partnership with. Both online and in-person training options will be free to participate in. At the end of the trainings, the team will share an anonymous post training assessment survey for participants to provide feedback. The project team will work with educators and professionals if they are interested in being trained to offer these workshops/trainings beyond the grant completion, and will offer train the trainer sessions and a stipend for instructors for participation. The team will conduct preliminary assessments of the feedback as quickly as possible after delivering each workshop in order to provide timely adjustments to training and material.

Phase 4: Project Evaluation and Information Dissemination (May 2027-July 2027): The project team will assess benchmarks and deliverables in order to complete the project within the established timeline. Throughout the project, the project director will continuously engage with the project team and data fellows, arrange monthly check in meetings, analyze the program outcomes, and share results. The project team will actively share findings and strategies through conference presentations, webinars, journal articles, as well as professional and community listservs. This is all in addition to making all of the materials created during this project to be made publicly available through repositories and other online resources. This includes instructional materials, project plans, research instruments, and other information needed to evaluate and replicate the project with similar results in other settings.

The curriculum and the trainings will be developed for high school and community college students while being created in a way that it can be modified and adapted to meet the needs of other communities. Making outputs publicly available will also allow this work to be scalable for other communities with similar or different learning needs. The materials developed through this program will be made openly available to the public and research community in a way intended to maximize use across technological platforms. The team will host all training material and project resources on a CreateFSU webpage which is freely accessible to everyone. Create FSU is an internal resource and was selected to host the grant

material for long term sustainability and with the expectation and ability to add future additional material after grant completion. This will enable adaptation of this program to other communities and advance research in unforeseen ways.

Project Result

Academic libraries play an essential role in developing and implementing sustainable, scalable, and innovative learning and engagement strategies in local communities.

- The project supports building a data-literate, informed community and empowers citizens with tools that could be critical in their professional career and in making informed life decisions.
- The project also fosters a community of practice, encouraging ongoing collaboration through webinars and trainings and facilitating knowledge sharing among participants and non-participants.
- The project will also yield multifaceted results, including comprehensive training where participants not only acquire valuable knowledge and skills but also become equipped to share the material with others.
- The project will result in building a community, fostering data literacy among students and prepare them for future educational opportunities and careers. All training materials, including lesson plans, trainings, recordings, and other resources will be uploaded to a CreateFSU webpage. This way, the project's outcomes can reach a national audience, making these materials available online to everyone for learning and enhancing their data skills.

The primary and immediate beneficiaries from the project will be the students in Leon County high schools and Tallahassee State College, in addition to the communities outside Tallahassee who can use the trainings and the resources to implement similar plans in their communities to foster data literacy in students and help build a more data literate society.

Reference

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Johnson, S. (2019). 6 steps to improve data literacy to deliver business value. InsideINFO. Retrieved from <http://www.insideinfo.com/au/business-intelligence-and-analytics/6-steps-improve-data-literacy-deliver-business-value>

LINCOLN HIGH SCHOOL". National Center for Education Statistics. Retrieved December 21, 2024.

Create FSU: <https://create.fsu.edu/>

Schedule of Completion

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