



LAURA BUSH 21st CENTURY LIBRARIAN PROGRAM

Sample Application RE-259048-OLS-25
Project Category: National Implementation

COBIMET

Amount awarded by IMLS: \$247,300

The Consortium of Metropolitan Libraries (COBIMET) with its 16 member institutions, the Puerto Rico Department of Education (PRDE), and Libraries Without Borders (LWB), will develop and deliver online synchronous workshops for librarians on the application of neuro-learning in teaching information literacy. NeuroLearning refers to the study of how the brain learns, integrating insights into neuroscience to improve teaching and learning processes. As information literacy educators, librarians can apply these concepts to enhance users' abilities to seek, assess, and utilize information efficiently. This project will design, test, and refine workshops and an educational toolkit to empower librarians with the necessary skills to improve how they teach information literacy, personalizing learning experiences based on the learning capabilities of their communities. The materials will also be adaptable, generalizable, and usable by other institutions through a project website and disseminated to the field through conferences and publications. By focusing on techniques that enhance attention, memory, multisensory engagement, emotional connection, and neuroplasticity, librarians can significantly improve students' mastery of information 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.

Application of NeuroLearning by Librarians in Teaching Information Literacy

The Consortium of Metropolitan Libraries (COBIMET) with its 16 member institutions, Puerto Rico Department of Education (PRDE) and Libraries Without Borders (LWB), is requesting IMLS for \$247,300.00 to develop and provide online synchronous workshops on the application of neuro-learning by Librarians in teaching information literacy to 250 schools, public, municipals, and community library professionals as part of 3-year national implementation project that meets Goal 2 of the LB21 grant program, which is intended to “Train and retain current library and archives professionals, faculty, and staff” and complies with Objective 2.1, intended to “Develop or enhance professional development and training programs to enable the library and archival workforce to meet the needs of their communities.” NeuroLearning refers to studying how the brain learns, integrating insights into neuroscience to improve teaching and learning processes. As information literacy educators, librarians can apply NeuroLearning concepts to enhance users' abilities to seek, assess, and utilize information efficiently. By focusing on techniques that enhance attention, memory, multisensory engagement, emotional connection, and neuroplasticity, librarians can significantly improve students' mastery of information literacy. This proposal will also make an educational toolkit that will be Open Source, available online, and bilingual (Spanish and English) so other organizations can replicate or use it. The workshops and instructional material provided will empower librarians with the necessary skills to improve how they teach information literacy, personalizing learning experiences based on the learning capabilities of their communities.

Project Justification: According to the Puerto Rico Department of Education's Plan for Academic Recovery (DEPR, 2021), students' academic lag caused by the aftermath of the pandemic still affects their learning performance. Furthermore, Academic performance in Puerto Rico has consistently deteriorated since Hurricane Maria (NPR, August 17, 2023). In 2022, 36% of fourth and 26% of eighth graders in the states were deemed "proficient" in mathematics, as reported by the National Assessment of Educational Progress, frequently referred to as the Nation's Report Card.

According to a 2023 Census publication, In Puerto Rico, “only 11% of 1st-grade students, 6% of 2nd graders, and only 1% of 3rd-grade students can read at their grade level.” Reading levels are a key measure of a student's literacy proficiency, assessing comprehension and fluency through phonemic awareness, decoding skills, and vocabulary acquisition. These assessments provide educators, including librarians, with essential insights into students' reading abilities, enabling them to tailor instructional strategies based on whether students read at, above, or below grade level. Early literacy development, particularly between kindergarten and third grade, is critical for academic achievement, cognitive growth, and forming informed, engaged citizens capable of meaningful social and economic participation. Addressing this issue through comprehensive initiatives is essential for ensuring students acquire the necessary literacy skills to succeed academically and contribute effectively to society.

Also, recent assessments indicate significant challenges in information literacy skills among K -12 students in the United States. The 2023 International Computer and Information Literacy Study (ICILS), which evaluates eighth-grade students' ability to use digital tools effectively, reported a decline in performance compared to previous years. The average score for U.S. computer and information literacy students was 482, reflecting a 37-point decrease from 2018, in line with the international average of 476. Similarly, in computational thinking, U.S. students scored an average of 461, marking another 37-point decline and positioning them below the global average of 483. These findings highlight a growing concern regarding students' ability to critically assess digital information, navigate online resources, and engage in technology-driven problem-solving. Addressing these deficiencies ensures students develop the digital and critical thinking skills required for academic success and active participation in an increasingly technology-driven society.

Puerto Rico's libraries, including school, public, private, municipal, and community libraries, serve as essential educational system components. They actively support schools in achieving institutional objectives and developing information literacy skills. Through structured instructional programs, academic programs, and community engagement initiatives, libraries facilitate the development of a collaborative learning environment that fosters engagement among librarians, educators, students, and the wider community.

By offering a dynamic and innovative setting that aligns with users' diverse needs, libraries contribute to cultivating key competencies essential for lifelong learning. They are pivotal in enhancing educational outcomes by promoting information literacy, encompassing critical thinking, problem-solving, evaluation, teamwork, and self-directed learning. Furthermore, libraries reinforce the efforts of academic institutions by supporting the mastery of competencies that are fundamental for active and constructive social participation (The PR 5-Year LSTA Plan 2023-2027, 2022).

Incorporating NeuroLearning concepts into information literacy instruction is a novel and innovative method for augmenting library services' educational efficacy and improving students' learning performance. Pradeep, K. et al. (2024) explains that utilizing methodologies from neuroscience, neuroeducation, neuro-learning, neuro didactics, and neuro evaluation is considered to enhance teaching and improve outcomes for acquiring, retaining, and applying knowledge in students. In the digital world, where disinformation and data saturation are rampant, librarians must implement effective pedagogical tactics corresponding to cognitive learning processes. NeuroLearning utilizes neuroscience findings on attention, memory, multimodal learning, emotion, and neuroplasticity to establish a research-based framework for enhancing cognitive retention and learner engagement. These neuro-educational concepts should be included in teacher training programs to make teaching and learning innovative, creative, critical, and proactive (Howard-Jones, P. et al., 2015). Librarians must grasp how the brain learns and reflect on all factors affecting learning to help students become autonomous, independent, and self-regulated. Workshops could help train librarians to incorporate active learning strategies such as group discussions, problem-solving tasks, and hands-on practice with library tools.

The Puerto Rico Department of Education Information Literacy Program was designed and implemented using the Big6 Information Literacy Model strategy across various school subjects to provide students and users with meaningful learning experiences. Its primary goal is cultivating lifelong learners and critical information consumers, equipping them with the essential skills to locate, evaluate, and utilize information effectively in an increasingly complex digital landscape.

For example, integrating NeuroLearning strategies with the Big6 model enhances information literacy by leveraging cognitive science principles that optimize learning and memory retention. NeuroLearning emphasizes brain-based strategies such as scaffolding, multimodal learning, cognitive load management, and metacognition, which align with the Big6 framework to improve student engagement and comprehension. For example, activating prior knowledge and using chunking techniques during the information-seeking and synthesis stages enhances retention and cognitive efficiency. Additionally, applying metacognitive strategies during the evaluation phase supports self-regulation and deeper learning. By combining the systematic nature of the Big6 model with neuroscience-backed learning approaches, educators can create an enriched instructional framework that promotes critical thinking, improves information retention, and prepares students for lifelong learning in a complex digital landscape.

Developing these skills enhances participants' instructional effectiveness, positioning them as leaders within their field while fostering increased job satisfaction and expanding opportunities for professional advancement. Additionally, integrating active learning strategies and NeuroLearning principles equips librarians with the

necessary competencies to address their communities' diverse cognitive and learning needs. This approach strengthens their ability to facilitate meaningful educational experiences and underscores a commitment to educational equity by ensuring inclusive and adaptable learning environments that accommodate varied learner profiles.

The Consortium of Metropolitan Libraries (COBIMET) will collaborate with 16 member institutions, Puerto Rico Department of Education (PRDE) and Libraries Without Borders (LWB), to develop synchronous workshops on the application of NeuroLearning by Librarians in teaching information literacy to 250 schools, public, municipal, and community library professionals. Free-to-use instructional learning material, Spanish and English, will be designed by subject matter experts (SMEs) in NeuroLearning education and its application in information literacy development by librarians (i.e., Toolkit) with the support of an Instructional Designer (ID). The Toolkit for NeuroLearning Strategies in Information Literacy Instruction will structure resources designed to enhance teaching and learning by integrating brain-based strategies with information literacy education. It includes evidence-based instructional frameworks, cognitive learning techniques, interactive activities, and assessment tools that align with how the brain processes, retains and applies information. This toolkit will support educators and librarians in designing engaging, student-centered learning experiences that improve critical thinking, digital literacy, and information evaluation skills while considering cognitive load, memory retention, and metacognition. The SME in NeuroLearning would possess extensive expertise in cognitive science, educational psychology, and brain-based learning methodologies, with a demonstrated ability to design and implement instructional strategies informed by neurological research on learning, memory retention, and student engagement. Similarly, the SME in Information Literacy will have a strong background in research methodologies, digital literacy, and information evaluation frameworks, along with substantial experience developing and integrating comprehensive information literacy programs. Those SMEs will provide the workshops with the support of an external evaluator who will develop assessment and evaluation instruments to gather qualitative and quantitative data.

Follow-up assessments will be performed to track participants' sustained application of NeuroLearning strategies through periodic communication by email or messaging. Since the data obtained from assessment procedures will be based on participants' experiences, the institution can contribute with evidence-based research and practice by submitting articles to peer-reviewed journals or presenting at local or national conferences. There will also be communication with the OER consortium to help expand the project's impact nationally.

The project deliverables developed will be adaptable, generalizable, and usable by other institutions as they will have access to curated digital resources, positively influencing education and research in NeuroLearning and its library applications. The COBIMET Learning Management System will maintain and make readily accessible instructional support material with a Creative Commons open-access license for other institutions or organizations.

Implementing a digital marketing and publicity plan designed by a Digital Marketing and Publicity Communications Expert to help with the enrollment process of target library populations, such as school, public, private, municipal, and community libraries, will support the recruitment process of participants. The plan will include communications with local and national libraries and educational organizations for support.

In summary, COBIMET requests the following budget for this 3-year national implementation project : (1) Salaries and Wages- \$45,000.00; (2) Fringe Benefits-\$9,000.00; (3) Travel-\$10,000.00; (4) Supplies, Materials, and Equipment- \$24,800.00; (5) Subawards and Contracts-\$158,500.00; (6) Student Support-\$0.00; (7) Other Costs-\$0.00; and (8) Indirect Costs-\$0.00. The Total Direct Costs will be \$247,300.

Project Workplan:

The three-year work plan for the IMLS grant period will be implemented through the participation of a group of qualified professionals and consultants. Also, there will be consultation with partners (COBIMET Consortium Member Library Directors Board, Libraries Without Borders, and the Puerto Rico Department of Education). Constant feedback provided by participants will also be considered during the project's duration. We propose the following work plan activities as part of the project:

Year 1 (August 2025-July 2026):

- Interview and contract qualified consulting project members. The Project Manager (PM) will contract qualified consulting project members and plan, implement, and manage the three-year project.
- Coordinate and meet with teaching and librarian organizations or associations to gather their input and recommendations that could benefit project content and goals. (PM, SMEs, ID, and an External Evaluator (EE).
- Develop the instructional learning material by Subject Matter Experts (SMEs) in NeuroLearning Education and Information Literacy in collaboration with an Instructional Designer (ID). ID will use the ADDIE model framework for instructional design to help educators create effective learning experiences. The acronym "ADDIE" stands for Analyze, Design, Develop, Implement, and Evaluate. The number of workshops will be based on the ADDIE Model and the assessments of SMEs.
- Develop and implement an assessment plan and activities for the workshops. Developing and implementing a structured assessment plan for workshops will ensure that learning objectives are effectively met, and participants acquire the intended knowledge and skills. (EE/ SME's/ID)
- Verifying compliance with ADA standards (Web Content Accessibility Guideline) instructional content, Web Page Designer (WPD).
- Publish all instructional support material developed on the COBIMET Learning Management System with a Creative Commons open-access license for other institutions or organizations. The COBIMET Learning Management System (CLMS) is the software platform designed to facilitate the administration, delivery, tracking, and assessment of educational and training programs provided by COBIMET. The CLMS is based on the open-source application software Moodle and has a mobile app capability that facilitates access to instructional material anywhere. (WPD)
- Establish and perform a pilot test group workshop with SMEs, with the participation of an ID and an EE, who will perform an assessment and incorporate recommendations. Hertzog (2008) indicates that a 10%-20% subset of the population is effective for estimating feasibility and adjusting before scaling up. The suggested pilot will be between 25 and 50 of the participants' targeted participation of 250. EE must implement a structured and methodologically sound assessment process to ensure the validity and reliability of findings. The evaluation must define clear objectives, success criteria, and key performance indicators (KPIs) aligned with the project's intended outcomes. A comprehensive evaluation framework must be developed, incorporating qualitative and quantitative data collection methods. The test group members will be from the target group.

At the end of each quarter, project participants will generate a milestone and activities report. The PM will gather data from project participants, such as finalizing the overall project timeline and deliverables, professional input, percentage of materials drafted, website design, and ADA compliance checks.

Year 2 (August 2026-July 2027):

- Revision of instructional learning material by SMEs and ID based on Pilot Group results.
- Translate the Spanish language instructional learning material to English. (Translator)
- Develop and implement a digital marketing and publicity plan to help with the enrollment process of target library populations, such as school, public, private, municipal, and community libraries. (Digital Marketing Specialist (DMS). Also, Libraries Without Borders (LWB) will collaborate as advisers and support this activity. LWB is developing a Directory of Puerto Rico's Libraries that provide services and support to the public, including the target population. LWW will help disseminate the project and help with the enrollment process of potential participants. 131 libraries are already part of their directory. Also, a participation stipend will be provided to promote participation.
- Coordinate enrollment and offer workshops. SMEs will provide workshops, and the Webmaster will support the enrollment process and provide technical support. Workshop Online Synchronous sessions will be recorded using Microsoft Teams for participants' future reference. Supporting educational instructional material, assessment instruments, and workshop recordings will be available in the COBIMET Learning Management System. The EE will participate when available to gather additional qualitative data from participants (i.e., comments, questions asked) (PM, SMEs/ID/EE/Webmaster).
- Participate in local and national Conferences to present and promote the Workshops.

At the end of each quarter, project participants will generate a milestone and activities report. The PM will gather data from project participants, such as a plan outlining targeted outreach strategies for increasing workshop participation and workshops scheduled and completed.

Year 3 (August 2027-July 2028):

- Continue activities of digital marketing and publicity plan. (DMS/LWB)
- Coordinate, enroll, and offer workshops. (PM, SMEs/ID/EE/Webmaster).
- Create a Creative Commons License for all Instructional Material. (Webmaster/PM)
- Participate in local and national Conferences to present and promote the workshops.
- Submit articles to peer-reviewed journals to present the project and its results. (PM/SMEs)

At the end of each quarter, project participants will generate a milestone and activities report. The PM will gather data from project participants, such as outreach efforts through national conferences, social media, and associations; workshops scheduled and completed; national conferences completed; and articles under peer review.

We propose the following key personnel to plan, execute, and manage the project.

Project Director: The proposed PD, Carlos Crespo Santiago, is a librarian. At present, he is COBIMET Executive Director and has ample experience working with school and academic libraries, library consortia, and the provision of professional development activities directed at librarians. He has a master's degree in library and information sciences and an AS in Computer Sciences and has been a librarian for more than 20 years. Prof. Crespo will be responsible for the project overall. He will oversee the execution of the three-year plan. He will also oversee the control and monitoring of financial matters, staff supervision, coordination with the evaluator, preparing reports, and managing day-to-day operations.

SME in Neurolearning: Maribel Aponte Rodríguez, Ed.D., MBA, CHO, combines her expertise in educational leadership with an innovative neuroscience-based approach, integrating strategies that enhance personal and

professional development. Holding a doctorate in Education with a specialization in Educational Leadership and certifications in Neuroleadership, Emotional Intelligence, and Neurotools from the HOLOS team in Chile, Maribel has designed and facilitated workshops and conferences at universities, schools, and various organizations across the country, exploring how the brain influences decision-making, team management, and organizational performance. Her training includes a postgraduate degree in Applied Emotional Coaching for Business and specializations in Emotional, Leadership, and Integral Neurotools, strengthening her ability to apply neuroscientific principles in educational and business contexts. As a certified DI.S.C. method trainer from the John Maxwell Team and a Master Trainer for the Josephson Institute of Ethics, Maribel has guided leaders in building collaborative and efficient environments, using neuroscience as a key tool to drive effective and conscious leadership.

SME in Information Literacy: Master's or Doctoral degree in Library and Information Science, Education, Instructional Design, Educational Technology, or a related field. Certification in information literacy instruction, research methodologies, or digital competencies is also preferred. The SME must have at least five years of experience developing and implementing information literacy programs within K-12, libraries, or non-profit sectors. Proficiency in information literacy standards, such as the AASL STANDARDS Framework for Learners or the Big6 Information Literacy Model, is essential for designing curriculum-aligned instructional materials and assessment tools.

Instructional designer: Dr. María López, Ed.D.: bachelor's degree in Secondary Education with a specialty in History, a master's degree in Curriculum and Teaching, and a doctorate in Instructional Technology and Distance Education. She served for many years as a high school teacher. Dr. López has also dedicated herself to the area of professional development for schoolteachers and the creation of instructional material and online courses. In addition, she has coordinated workshop proposals for parents. She currently serves as an instructional designer at the college level. She is also a consultant in instructional design at several institutions, such as COBIMET.

Webmaster and IT Management: Areas of expertise will include webmaster and systems development, learning management systems, OPACs, virtual library, cloud computing, Microsoft 365, Google Workspaces, and resiliency building.

External Evaluator: The role of an external evaluator in a project will require a highly qualified professional with a strong academic background, extensive experience in program evaluation, and advanced technical skills in research methodologies and data analysis. A minimum of a Master's or Doctoral degree in fields such as Education, Social Sciences, Public Policy, Program Evaluation, or related disciplines is essential, complemented by specialized evaluation or research methods certifications. The evaluator must possess at least three to five years of experience conducting formative and summative evaluations, performance assessments, and impact studies across sectors such as education, public policy, non-profits, or government-funded initiatives. Additional information on personnel qualifications is available on the resumes of Key Project Staff and Consultants.

Digital Marketing and Publicity Communications Expert: Melmarie Candelario holds a master's in communications in Digital Marketing and has more than five years of experience in online marketing and publicity. She will create a digital marketing and publicity plan to help with the enrolment process of target library populations, such as school, public, private, municipal, and community libraries, as well as the Regional Library for the Blind and Physically Handicapped.

Advisers: Since COBIMET is a non-profit organization, its board of directors comprises 16 academic librarians who are library directors at their respective universities. These colleagues will collaborate on the project as consultants when necessary. Also, Libraries Without Borders (LWB), known internationally as Bibliothèques Sans Frontières (BSF), is a global non-profit organization dedicated to providing access to information, education, and cultural

resources to vulnerable populations worldwide. Established in 2007, LWB collaborates with public libraries and community organizations to identify and remove barriers to library utilization, thereby supporting the development of stronger, more inclusive communities.

This project engages underserved communities nationally and globally, and in various ways. First, meeting with local and national teachers (National Education Association and Open Education Consortium) and librarian organizations or associations (for example, Sociedad de Bibliotecarios de Puerto Rico) to gather their input and recommendations that could benefit the project's content and goals. Second is the SME's opportunity to develop instructional material, expanding the project to include library staff fluent in English and Spanish. Third, it provides access to no-cost training materials that benefit underfunded groups. Third, a marketing and outreach plan for the program's expansion will be developed to help the communities that struggle to access and benefit from training.

Project Results: With LB21 Program funds, COBIMET to provide the following:

- Free-to-use instructional learning material designed by subject matter experts (SMEs) in NeuroLearning education and its application in information literacy development by librarians (i.e. Toolkit). The project deliverables developed will be adaptable, generalizable, and usable by other institutions as they will have access to curated digital resources, positively influencing education and research in NeuroLearning and its library applications.
- Developed project materials with a Creative Commons Attribution-Non-Commercial license, allowing others to remix, adapt, and build upon them.
- Offer 250 schools and public, municipal, and community library professionals online synchronous workshops on how librarians can use NeuroLearning education to teach information literacy.
- Extend the workshops more rapidly and broadly to librarians fluent in English and Spanish in Puerto Rico and other parts of the United States.
- Submit articles to peer-reviewed journals to present the project and its results. Since the data obtained from assessment procedures will be based on participants' experiences, the institution can contribute with evidence-based research and practice. The project's results and findings will be used to search for external funds that will allow the project to mature and potentially develop in diverse directions.
- The project's results will be disseminated through national conferences, professional associations, article publications, and social media.
- To sustain this benefit beyond the period's conclusion, the workshops and all the instructional materials developed will be maintained on COBIMET servers.
- Internal funds will be identified to maintain the project and provide periodic workshops. One of the main objectives of COBIMET is to enable and promote the development of information literacy skills in its users and to provide professional development to librarians on how to teach those competencies.
- To measure success, we will continue conducting pre-post-tests, evaluations, and other qualitative and quantitative practices to obtain participants' data and establish a baseline for future research development. The short-, medium-, and long-term results on participants will be:
 - Enhanced Skills: Participants will possess advanced NeuroLearning education skills, enabling them to effectively serve patrons by applying workshop strategies.
 - Professional Growth: Participants will experience personal and career growth, improving job prospects and satisfaction.
 - Innovative Services: Libraries will benefit from librarians' expertise, offering innovative NeuroLearning activities, programs, and services.

- The project deliverables developed will be adaptable, generalizable, and usable by other institutions as they will have access to curated digital resources, positively influencing education and research in NeuroLearning and its library applications.

Year 1													
	2025					2026							
Month	Aug	Sept	Oct	Nov	Dic	Jan	Feb	Mar	Apr	May	Jun	Jul	
Activity													
Interview and contract qualified consulting project members.													
Coordinate and meet with teaching and librarian organizations or associations to gather their input and recommendations that could benefit project content and goals.													
Develop the instructional learning material.													
Develop and implement an assessment plan and activities for the workshops													
Verifying compliance with ADA standards (Web Content Accessibility Guideline) instructional content, Web Page Designer (WPD).													
Publish all instructional support material developed on the COBIMET Learning Management System with a Creative Commons open-access license for other institutions or organizations													
Establish and perform a pilot test group workshop													

Year 2													
	2026					2027							
Month	Aug	Sept	Oct	Nov	Dic	Jan	Feb	Mar	Apr	May	Jun	Jul	
Activity													
Revision of instructional learning material by SMEs and ID based on Pilot Group results.													
Translate the Spanish language instructional learning material to English.													
Develop and implement a digital marketing and publicity plan to help with the enrollment process													
Coordinate enrollment and offer workshops.													
Participate in local and national Conferences to present and promote the Workshops													

Year 3													
	2027					2028							
Month	Aug	Sept	Oct	Nov	Dic	Jan	Feb	Mar	Apr	May	Jun	Jul	
Activity													
Continue activities of digital marketing and publicity plan.													
Coordinate, enroll, and offer workshops.													
Create a Creative Commons License for all Instructional Material.													
Participate in local and national Conferences to present and promote the workshops.													
Submit articles to peer-reviewed journals to present the project and its results.													