

Community Data Curation Competency: Curriculum Development for Master's Education

A project team from Indiana University-Indianapolis (IUPUI) requests \$148,429 for a two-year LB21 Planning Grant to **enhance the training of information professionals** through creating a data curation curriculum that contributes to the communities' well-being. This project bridges the gap in existing data curation education by creating a community data curation competencies framework, developing a curriculum based on this framework, and piloting the developed curriculum.

PROJECT JUSTIFICATION

As data becomes more pervasive in all sectors of society, there is a growing need for information professionals who can assist data curation efforts outside academia. Both public and private sector community organizations (e.g., local government, non-profit organizations) have become more data-driven by generating and using organizational and open data for decision-making, program development, and assessment.¹ With increased data utilization, community organizations face data curation challenges without a curation expert within their organizations.²

Library and Information Science (LIS) professionals have spearheaded data curation, providing services and education in research data management (RDM) and scientific data curation. However, LIS educators need to prepare our professionals for emerging data curation needs outside of the research context in public and private sectors, as we name “**community data curation.**” LIS professionals have moderately engaged with community data challenges through eGovernment, citizen science, and Open Data.^{3,4} However, few LIS educational efforts focus on non-research data needs (e.g., [Leveraging Open Data](#) and [ODPG](#)), and much of LIS data curation education has focused on academic workforce needs.⁵ While one LIS educational effort explores [Integrated Community-Based Learning](#), this does not examine community data needs. Yet, existing RDM-focused efforts can be transferred to meet community organizations' data curation needs with careful examination, stakeholder feedback, and curriculum development to reflect the community data context.

The goals of this project are to strategically partner with relevant stakeholders of community data, including community organizations, data curation practitioners, and data curation education experts, to co-create a community data curation curriculum using a community-engaged research approach. Engaging these critical stakeholders will help us design a data curation curriculum that reflects the voices of community organizations and accounts for competencies and skills gaps in the current data curation curriculum to advance data curation education for information professionals.

Preliminary Studies

Community Data Curation Needs. The Co-PI previously investigated the community data curation challenges ([LG-96-17-0184-17](#)) of 45 community agencies, which revealed the unique community data problems (e.g., ethics, policy, resources, and practices) and a need to train information professionals for communities' distinctive needs.

Masters' Data Curation Education. The two PIs collected and analyzed data curation course syllabi from ALA-accredited MLIS programs (publication in progress). The results reveal that RDM is the dominant topic in existing curation education, and a gap exists in the current data curation curriculum to address community data curation needs.

PROJECT WORK PLAN

The main project goals are to (1) create a community data curation competencies framework; (2) design teaching modules to develop a community data curation curriculum that incorporates the competencies to train future informational professionals; and (3) to pilot and evaluate the community data curation curriculum to extend existing master's-level data curation curriculum and future planned professional development opportunities for information professionals.

Phase 1 (Goal 1): Development of a Community Data Curation Competencies Framework (8/2022 to 5/2023). We will first review existing data curation competencies from LIS education and professional development efforts and create an initial framework of data curation competencies. Then we will hold three focus groups sessions to review the framework and integrate the perspectives of relevant stakeholders. Those stakeholders will include: (1) Community organizations, to learn about their data curation needs, practices, challenges, and skills gaps, nationally recruited by working with our Advisory Board (AB) and the Co-PI's connection with 10 community data intermediary organizations nation-wide as a part of her previous work ([#LG-96-17-0184-17](#)); (2) Data curation professionals, to learn about their experiences and competencies working with various types of data, recruited from the AB and the PIs' professional network (i.e., RDAP, RDA, data librarian associations); and (3) Data curation educators, to review educational opportunities and challenges to address the identified community data curation competencies, recruited from our preliminary study on Master's Data Curation Education who previously taught relevant courses. We will update the competencies framework based on the findings, which will also be reviewed by AB. **Phase 2 (Goal 2): Development of a Community Data Curation Curriculum (6/2023 to 12/2023).** We will review ALA-accredited LIS school's data curation (or relevant) curriculum to identify gaps based on the Community Data Curation Competency

¹ Yoon, A., & Copeland, A. (2019). Understanding social impact of data on local communities. *Aslib Journal of Information Management*, 71(4), 558–567.

² Bertot, J. C., Butler, B. S., & Travis, D. M. (2014). Local big data: The role of libraries in building community data infrastructures. *Proceedings of the 15th Annual International Conference on Digital Government Research - Dgo '14*, 17–23.

³ Bertot, J. C., Jaeger, P. T., Gorham, U., Taylor, N. G., & Lincoln, R. (2013). Delivering e-government services and transforming communities through innovative partnerships: Public libraries, government agencies, and community organizations. *Information Policy*, 18(2), 127–138

⁴ Hill, N. (2014, September 25). Chattanooga Public Library and Open Data. Medium. <https://tinyurl.com/y2klmwv8>

⁵ Palmer, C. L., Thompson, C. A., Baker, K. S., & Senseney, M. (2014). *Meeting Data Workforce Needs: Indicators Based on Recent Data Curation Placements*. iConference 2014 Proceedings.

Framework developed in Phase 1. Since our preliminary study of Masters' Data Curation Education analyzed course-level education, we will extend our unit of analysis to the specialization or degree-level depending on the context of educational opportunity. From our analysis, we will identify the gaps in existing curriculum and develop guiding modules to create a new curriculum to fulfill the gap. Our guiding modules will be created around each competency, combined with teaching strategies and resources. To ensure we reflect community needs and integrate stakeholders' feedback, we will engage with our AB and community organizations, including regular review and engagement sessions for module development.

Phase 3 (Goal 3): Piloting and Evaluation of the Community Data Curation Curriculum (1/2024 to 7/2024). Using the modules developed in Phase 2, we will pilot a new course or set of modules that can be added to existing IUPUI MLIS courses. For Phase 2 and 3, we will work with an instructional design expert to design and pilot the modules developed. We will conduct systematic curriculum evaluation through (1) pre-tests/post-tests and summative/formative assessments to evaluate how well students learn the competencies; (2) alignment analysis of the learning objectives, curriculum materials, and assessments to see if they align with the competencies; and (3) mid-semester and end-semester surveys to examine student experiences with the curriculum. While the pilot will only be conducted at the masters' level at this time, the evaluation data will guide us to understand the success of the implementation and also any needed modification for future curriculum.

Evaluation Plan. The Plan-Do-Evaluate approach from the Community-Partnered Participatory Research (CPPR)⁶ will be used to evaluate our processes, activities, and outcomes for engaging with our stakeholders. This will allow us to discuss planned activities with our stakeholders from the beginning of each phase (Plan), conduct said activities during each phase (Do), and evaluate the outcomes with our stakeholders during the end-of-phase meeting (Evaluate). We will also conduct curriculum evaluation (both summative/formative) during Phase 3, as described in the Project Work Plan.

DIVERSITY PLAN

Our diversity plan will: (1) target underrepresented students to contribute to this project by leveraging the [Wilma Gibbs Moore Graduate Endowment Scholarship](#) in the Department of Library and Information Science at IUPUI, which aims to enhance diversity in the LIS profession; (2) identify organizations that serve underrepresented communities for focus groups with the help of our AB, IUPUI Office of Community Engagement, and the project team's national connection; (3) ask focus group participants to address diversity and inclusion issues relevant to data curation curriculum during the focus group discussion; and (4) utilize best practices and techniques for inclusive and anti-racist curriculum when developing our curriculum modules.

PROJECT RESULTS AND DISSEMINATION

Outcomes of our project: (1) a framework of community data curation competencies; (2) guiding modules to teach community data curation competencies; and (3) the piloted community data curation curriculum, will be publicly available via the project website, Canvas Commons (online learning management tool), and Open Educational Resources (e.g., OER Commons), using the CC BY license for reuse. We will widely disseminate these outcomes to our study participants, the LIS community, and other stakeholders through social media, conferences papers or workshops (ALISE, ASIS&T, RDAP), and journal articles.

Broader Impact

This research contributes to identifying gaps in current data curation competencies and expands the educational opportunities for community data curation. This project will broaden the professional realm of data curation by preparing future information professionals working with public and private sector data outside of academic contexts. Our curriculum (with guiding modules) can also be replicated with a modification specific to the curriculum context at certain institutions, which supports flexible and easy adoption of teaching community data curation competencies. While the modules we develop will first be implemented as master's-level curriculum, they can also be extended to the professional development context.

Project Personnel

PI: Dr. Angela P. Murillo is an Assistant Professor in the School of Informatics and Computing (SOIC) at IUPUI. Her research areas include data curation, data science education, and education evaluation. She is Co-PI for CI Compass ([NSF # 2127458](#)), leading the Student Internship Program and the data curation efforts. **Co-PI:** Dr. Ayoung Yoon is an Associate Professor in SOIC, IUPUI. Her research areas include community data reuse, data curation, and open data engagement funded by IMLS (#LG-96-17-0184-17, #LG-250098-OLS-21). **Advisory Board (AB):** Our AB consists of experts from four different areas: Community organizations (Indiana Office of Sustainability, Keep Indianapolis Beautiful, Hope Training Academy); Data curation curriculum experts: Dr. Annie Kim (University of North Texas) and Dr. Nic Weber (University of Washington); CPPR expert: Dr. Barbara Pierce (IUPUI); and Data curation practitioners: Minglu Wang (York University Libraries) and Sarah Dorphinghaus (University of Kentucky Libraries).

Budget: \$148,429 (Total direct costs: \$93,646, Indirect costs (F&A @58.5%): \$54,783). Project personnel: \$80,008 (PI and Co-PI One-month Summer Salary, Graduate Assistant (\$15/hour at 950); Advisory Board: \$6,000; Focus Group: \$1,500 (\$100 x 15, five participants per focus group, plus AB members); Focus Group Transcription: \$337.50 (\$1.25 x 90m x 3); Instructional designer: \$3,000 (\$30/hour at 100 hours); Qualitative Software: \$300; and Conference Registration and Travel: \$2,500

6 Jones, L., Wells, K., Norris, K., Meade, B., & Koegel, P. (2009). The vision, valley, and victory of community engagement. *Ethnicity & Disease, 19*(4 Suppl 6), S6-3-7.