Data Literacy Leadership Preparation for School Librarians

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Abstract:

This paper presents findings and shares the experiences of the Preparing Librarians for Data Literacy Leadership Project (DataLeadPrep) initiative project team from the University of North Texas (UNT) and Texas Woman's University (TWU) to develop and scale a competency development program in data literacy leadership for pre-service school librarians and as a continuing education program. Findings from three stages of data collection suggest that stakeholders in both school and public library settings recognize the imperative for data-informed decision-making but attribute competency to experience on the job rather than to professional preparation programs, that the range of competencies perceived as necessary by stakeholders would be a challenge to develop within professional preparation programs as currently structured, and that a personalized learning approach would be most effective in implementing a data literacy leadership curriculum within a library professional preparation program.

Keywords: data literacy, school libraries, preparation programs, leadership.

Introduction

Schools, public libraries, and other civic institutions are being called upon to increase efficiency and effectiveness through data-informed decision-making and advocacy efforts. Yet, there is a sizable gap between the relevant data sources available and the expertise of decision-makers within these institutions to make data-informed decisions (Chant & Enis, 2014; Chiranov, 2014; Mandinach & Gummer, 2016; Means, Padilla, & Gallagher, 2010). Without

adequate preparation in the use of data in effective decision-making, there is little reason to expect that stakeholders in these community institutions will be effective in responding to the call. Library professionals within these settings, however, are well positioned to provide leadership in data literacy, broadly defined as "the ability to understand and use data effectively to inform decisions" (Mandinach & Gummer, 2013, p. 30), and to facilitate transformational change (Marsh & Farrell, 2014).

The forum reported in *Positioning Library and Information Science Graduate Programs for 21st Century Practice* was convened to address, in part, "the scope of disjoint between formal LIS education and the needs of the field" (Sands et al., 2018, p. 1). Leaders in library and information science (LIS) education attending the forum also stated the need for data science skills in pre-service preparation programs. These needs are compatible with the International Federation of Library Associations (IFLA) School Library Guidelines (2015) that recommend:
- evidence-based practice that "focuses on data collection and analysis for the purpose of improvements in practice" (p. 47), and
- evaluation of the impact of the school library that "focuses on the concept of 'value-added' and can be designed to identify the contribution of school library inquiry activities to student learning" (p. 48).

The development of data science skills also aligns with IFLA's strategic direction in the capacity-building framework (2017) through the provision of effective training for library leaders.

At a national level, the American Association for School Librarians (AASL) uses five standards to outline the responsibilities for educators of school librarians (2010). Standard 3: Information and Knowledge, includes the need for preparation of school librarians to understand and work with data:

> 3.4 Research and Knowledge Creation
> Candidates use evidence-based, action research to collect data. Candidates interpret and use data to create and share new knowledge to improve practice in school libraries. (p. 10).

Standard 5: Program Management and Administration, addresses the need for school librarians to be prepared to utilize data for planning and assessment:

> 5.4 Strategic Planning and Assessment
> Candidates communicate and collaborate with students, teachers, administrators, and community members to develop a library program that aligns resources, services, and standards with the school's mission. Candidates make effective use of data and information to assess how the library program addresses the needs of their diverse communities. (p. 17).

With the context and need for data literacy clearly delineated, actionable pre-service preparation plans are required to build school librarian data science and leadership skills.

Notable efforts underway to address the development of data literacy with students and patrons in schools include *The Supporting Librarians in Adding Data Literacy Skills to Information Literacy Instruction Project* (a.k.a. Creating Data Literate Students), exploring the development of data literacy competencies of high school librarians through in-service professional development to support instruction in student comprehension skills (Fontichiaro & Oehrli, 2015).

With the support of a grant from the Institute of Museum and Library Services (IMLS), efforts are underway to design and deliver an inclusive pre-service data literacy curriculum. The

DataLeadPrep Project addresses the need for capacity building of school librarians at all grade levels with the exploration and piloting of a data literacy leadership training curriculum to be implemented in the master's-level pre-service library professional preparation programs at the University of North Texas (UNT) and Texas Woman's University (TWU). Together, these two American Library Association (ALA) accredited school library preparation programs prepare the greatest percentage of library professionals in the state of Texas. Practitioners and other stakeholders were deeply involved in the design and development of the training curriculum, linking competencies to real-world needs.

Three Levels of Service in Two Settings

In the first stages of scoping the DataLeadPrep Project, the project team recognized the need for data literacy leadership at three levels of service and the parallel structures of decision-making within school and public libraries:
1) at the individual student or patron level, the data literate librarian focuses on engagement characterized by direct instruction in data literacy skill development or consultation through the reference interview or program/service delivery;
2) at the staff level, the data literate librarian focuses on engagement characterized by collaboration with colleagues to use data in instructional planning or the design and evaluation of programs/services; and
3) at the organizational level, the data literate librarian focuses on engagement characterized by supporting administration in the use of data for community analyses, goal-setting, and organizational improvement.

DataLeadPrep

The DataLeadPrep project addresses the need for capacity building by:
1) implementing a **pre-service training curriculum** to prepare library professionals for facilitating data-informed decision-making,
2) targeting library professionals in the community settings of **both schools and public libraries,**
3) focusing on data-informed decision-making at the **staff and organizational levels**, and
4) placing equal emphasis on **data literacy as well as leadership competency development** so that data literate leaders transform practice not only in their own organizations, but in the field of librarianship.

The initiative included three components of information gathering: the Data Use in Schools and Public Libraries Survey, the Data Use and Services in Schools and Public Libraries Summit, and the Design Day Workshop for Data Literacy Leadership Curriculum.

The Data Use in Schools and Public Libraries Survey was administered in the fall of 2018; 130 public library administrators and 189 school administrators completed the survey. This survey served as an assessment of needs for support in the use of data in decision-making within these settings. Results suggest that administrators in both settings recognized the imperative to access, analyze, and apply data to inform decision-making within their organizations. Moreover, these administrators accessed routine and limited sources of data in the decision-making process, felt more confident in understanding the meaning of data sources than they did in applying these to decision-making processes, and attributed their data literacy

skills to experience gained in-service versus their professional preparation programs. Public library administrators, in contrast with school administrators, felt they had few to no resources to support their data-informed decision-making efforts.

The Data Use and Services in Schools and Public Libraries Summit was held in late fall of 2018; 12 participants attended, representing school and public library administrators, school teachers, front-line public librarians, and pre-service library professional students. These participants engaged in explorations of organizational challenges, their data needs in addressing these challenges, and the competencies a library professional would need to effectively facilitate data-informed decision-making in school and public library settings. Results of this summit indicated that stakeholders recognized the varied sources of data that could address the challenges they faced and that library professionals within their organizations trained to facilitate data-informed decision-making would be valuable assets. However, they also recognized that the competencies required for these library professionals to be effective were extensive and were sceptical that this type of training could be implemented in professional preparation programs as currently structured. An unexpected result was that participants overwhelmingly expressed an appreciation for the compensation they received in the form of honoraria, stating that they felt their intellectual contributions to the project were acknowledged. This result prompted the project team to include participant compensation in the next stage of the project.

With the optimism and caution gleaned from the first two phases of the project in mind, the project team used the data collected from both the survey and the summit to guide the development of the **Design Day Workshop for Data Literacy Leadership Curriculum**. This third component of information gathering was a workshop organized around the application of IDEO's *Design Thinking for Libraries Process Model* (2015), using the stages of Inspiration, Ideation, and Iteration (see Figure 1).

Design thinking is an approach to problem solving used increasingly in library settings:

> Design thinking is a creative approach, or a series of steps that will help you design meaningful solutions for your library. If you think about it as a Venn diagram, design thinking solutions exist at the intersection of three factors: desirability, feasibility, and viability. In other words, when the solution is desirable, it's financially viable, and it's technologically feasible, innovation happens where these factors overlap. (IDEO, 2015, p. 6)

The design thinking process was used to create a scope and sequence for the data literacy leadership curriculum. Eight pre-service library professional students representing the target audience of the pilot curriculum served as members of three design teams that created prototypes for the pilot training. Members of the project team joined each design team, acting as researcher-participants. Each team was assigned the same challenge but chose to approach the challenge differently with one team focusing on curriculum structure, one team focusing on resource repository development, and one team focusing on format.

GETTING STARTED: THE DESIGN THINKING PROCESS

INSPIRATION
is about framing a design
challenge and discovering
new perspectives on the
opportunity.

IDEATION
is about generating
ideas and making
them tangible.

ITERATION
is about continual
experimentation based on
user feedback.

*I have a
challenge.*

*I've learned
something.*

*I have a
prototype.*

How do I
approach it?

How do I
interpret it
and express
my ideas?

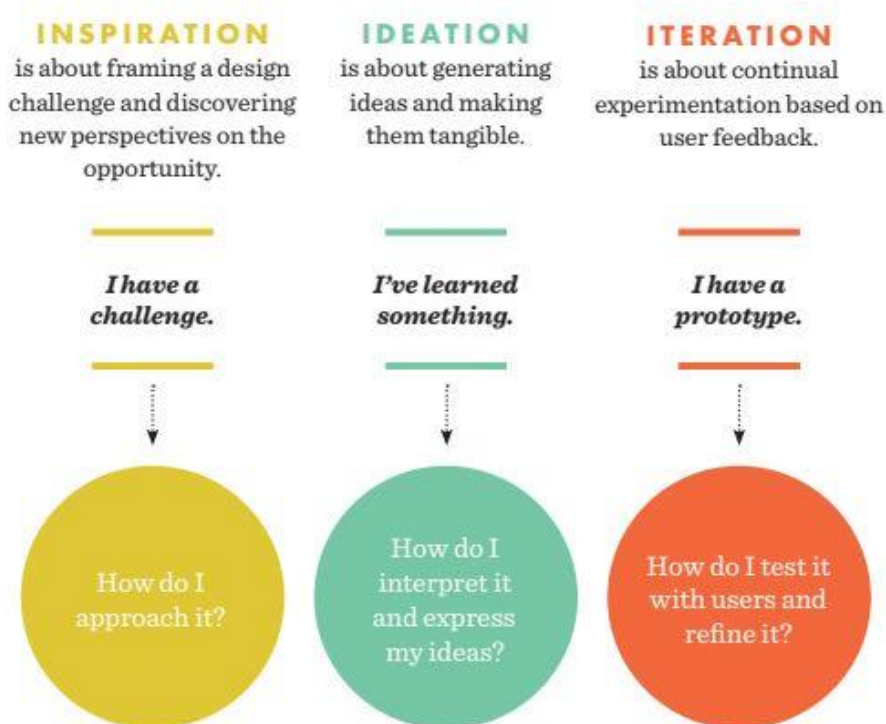How do I test it
with users and
refine it?

Figure 1. An overview of getting started with design thinking. IDEO. (2015). *Design thinking for libraries: A toolkit for patron-centered design,* p. 9. Retrieved from http://designthinkingforlibraries.com/

Results of the Design Day Workshop included the establishment of three fundamental curriculum elements. First, the recognition of the wide range of incoming skills and competencies that might need to be addressed, depending on previous experience and opportunities. A creative way to meet that range of incoming and ongoing needs led to consideration of the value of establishing an open education resources (OER) repository to support the content learning of the data literacy leadership curriculum. Examples of resources include, but are not limited to, tutorial videos and basic research methods information available via the free web and subscription services. Second, participants identified the need to apply new learning to authentic and meaningful problems within each context, such as an iterative grant writing assignment. Third, participatory designers also recommended that the curriculum format be designed along personalized learning principles to maximize suitability and feasibility within the current structure of master's level professional preparation programs, utilizing project-based learning, hands-on learning, and module-based learning. The combined result of these fundamental elements was a pre-service training curriculum.

The pre-service training curriculum is composed of five modules: an introduction, data basics, data contexts, data applications, and a conclusion. The learning modules are designed to develop a base of knowledge in three competency areas:
1) Data Literacy Knowledge and Skills,
2) Leadership and Facilitation Skills, and
3) Cultural, Social, and Political Proficiency

The data literacy knowledge and skills competency area includes applying data literacy knowledge and skills to collect, to accurately interpret, and to analyze multiple data sources and research for the purposes of identifying student-learning problems, verifying causes and generating solutions, testing hypotheses, and improving results. The leadership and facilitation of skills competency area includes applying leadership and facilitation skills to create high-functioning teams, to facilitate productive dialogue focused on teaching and learning, to foster commitment to rigorous standards for all students, to build collegial relationships based on trust and respect, and to sustain collaborative inquiry. The cultural proficiency competency area includes applying cultural proficiency (the ability to interact knowledgably and respectfully with diverse cultures) to view achievement gaps as solvable problems, not inevitable consequences of students' backgrounds; to generate solutions that reflect an understanding of diverse students' strengths, values, and perspectives; and to handle cultural conflict effectively (Love , 2008).

The implementation of the pre-service professional preparation pilot program to develop data literacy competencies in either school or public library settings in a systematic way at UNT and TWU is scheduled for the summer and fall of 2019. The initial pilot will occur independently of existing courses, where volunteers will provide feedback on the curriculum prototype in another iteration phase. As curriculum development is an iterative process, revisions will occur as needed, and the curriculum will be piloted in coursework in the fall 2019 semester. The training curriculum will then become a required component of the master's-level preparation program and could serve as a model for national implementation. This training curriculum is expected to have a profound impact on practice, as graduates will be prepared to provide essential services in data use to their communities, and will be disseminated through multiple channels, including the Association for Library and Information Science Education (ALISE) 2019 conference and the 2019 International Association of School Librarianship (IASL) Conference.

Current project information is available on the Preparing Librarians for Data Literacy Leadership Project website: https://sites.google.com/view/dataliteracyleadershipproject/home.

Conclusion

Engaging a range of constituents at different levels of the educational community allowed for collaboration with students, teachers, administrators, and community members to develop a training curriculum that recognized and addressed the challenges they face in using data for effective decision-making. The combined knowledge and experience proved invaluable for identifying the context for the application of data literacy skills and the competencies needed to meet the leadership challenge of providing data literacy expertise.

Activating a project team that enabled collaboration between faculty members at two universities is not unique. However, activating that collaboration between faculty who provide pre-service training for a majority of school library students in the state of Texas was innovative and constructive. The competition for pre-service students was side-lined in favour of developing a curriculum that would serve the common good. The goal was to use data to create and share new knowledge to improve practice, echoing the AASL responsibilities for educators of school librarians and modelling the process of understanding the needs of your patrons and engaging community members in problem solving. Data was gathered from three components of information gathering that involved different approaches: a data survey, a

summit, and a workshop. The combined result is a pre-service curriculum that addresses needs and builds capacity.

The project team recognizes the critical cycle of research into practice and back into research. This curriculum development promotes a dialogue for change in that the project team, each a full-time faculty member at two universities, intend to redesign curriculum at both institutions, thus shaping practice in school and public libraries for a significant number of pre-service students.

For the curriculum to remain relevant, the appropriate progression of the project to the next stage of the project life cycle would be toward scaling the training curriculum out to communities as a continuing education opportunity. Capacity building would then extend from pre-service school librarians to those currently in service.

Acknowledgments

References

American Library Association & American Association of School Librarians. (2010). ALA/AASL Standards for Initial Preparation of School Librarians. Retrieved from http://www.ala.org/aasl/sites/ala.org.aasl/files/content/aasleducation/schoollibrary/2010_standards_with_rubrics_and_statements_1-31-11.pdf

Chant, I., & Enis, M. (2014). The numbers game. *Library Journal, 139*(8), 28-28.

Chiranov, M. (2014). Creating measurement addiction – a tool for better advocacy and improved management. *Performance Measurement and Metrics, 15*(3), 99-111.

Fontichiaro, K. & Oehrli, J. (2015). Supporting librarians in adding data literacy skills to information literacy instruction. Retrieved from http://datalit.sites.uofmhosting.net/

IDEO. (2015). *Design thinking for libraries: A toolkit for patron-centered design*. Retrieved from http://designthinkingforlibraries.com/

International Federation of Library Associations. (2015). *IFLA School Library Guidelines*. Retrieved from https://www.ifla.org/publications/node/9512?og=52

International Federation of Library Associations. (2017). *IFLA Strategic Plan 2016-2021*. Retrieved from https://www.ifla.org/strategic-plan

Mandinach, E. B., & Gummer, E. S. (2013). A systemic view of implementing data literacy in educator preparation. *Educational Researcher, 42*(1), 30-37.

Mandinach, E. B., & Gummer, E. S. (2016). *Data literacy for educators: Making it count in teacher preparation and practice*. New York, NY: Teachers College Press.

Marsh, J. A., & Farrell, C. C. (2014). How leaders can support teachers with data-driven decision making: A framework for understanding capacity building. *Educational Management Administration & Leadership, 43*(2), 269-289.

Means, B., Padilla, C., & Gallagher, L. (2010). *Use of education data at the local level: From accountability to instructional improvement*. Washington, DC: U.S. Department of Education, Office of Planning, Evaluation, and Policy Development.

Sands, A. E., Toro, S., DeVoe, T., Fuller, S., & Wolff-Eisenberg, C. (2018). *Positioning library and information science graduate programs for 21st century practice*. Institute of Museum and Library Services. Washington, DC.