Brecha entre investigación y práctica bibliotecológica. Cómo reducir la distancia

The gap between research and library practice. How to reduce the distance

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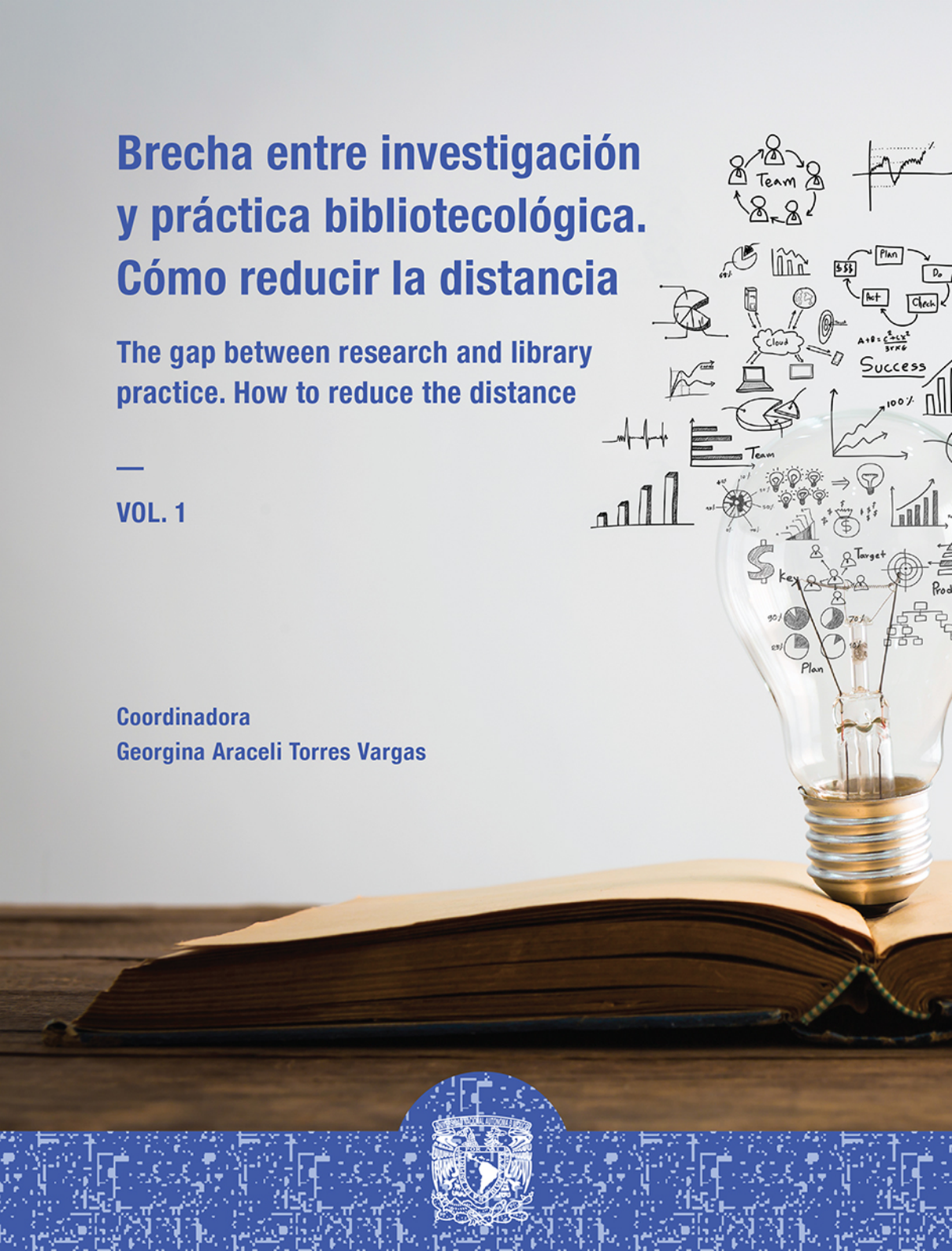
Coordinadora
Georgina Araceli Torres Vargas



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Educating Library Professionals for Research and Data-Intensive Environment: IFLA Library Theory and Research (LTR) Research Projects

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Introduction

The gap between research and library practice has been discussed in the library and information science (LIS) literature for almost two decades (Haddow and Klobas 2004). In the IFLA conference paper, Turner talks about the lack of the "crossfertilisation of ideas" and "a communication chasm" between LIS researchers and practitioners (Turner 2002, 9). Powell *et al.* (2002) discuss the limited involvement of LIS practitioners in conducting original research. Haddow and Klobas (2004) identify a range of gaps from the lack of communication between the research and practice communities to insufficient education of library practitioners in research methods. The proposed strategies for closing the gap focus on improving practitioners' research skills, increasing their research activity, and encouraging more effective communication of research to practice. The topic is getting even more attention in recent years because of the expanding roles of library professionals in the

data-intensive environment and the need to educate librarians as researchers (Berg and Banks 2016; Koltay 2019; Luo 2011).

The statements about data as "the new oil of the 21st century" appear in popular blogs and economy magazines, highlighting the importance of data in the modern economy (*The Economist* 2017). However, the exponential growth of data is not just a domain of commercial giants like Amazon, Facebook, or Google. Modern science has increasingly become data-intensive with researchers using new digital methodology and producing massive data sets (Borgman 2012). Koltay defines Research 2.0 as "data-intensive research carried out in the natural sciences, social sciences and the humanities" and states that Research 2.0 requires innovative approaches to library service (Koltay 2019, 75). The increasing volume and complexity of digital data as well as the challenges associated with organization, preservation, and reuse of data have contributed to the development of new library services to support scholars in managing data throughout the research and dissemination process (Jahnke, Asher, and Keralis 2012).

This paper presents two research projects undertaken by the Library Theory and Research (LTR) of the International Federation of Library Associations (IFLA). The first project aimed at exploring the new roles and responsibilities of library professionals in managing research data in interdisciplinary and international contexts. The second project focuses on educating library professionals for the global data-driven environment where practitioners are increasingly expected to engage in assessment, research data management, and empirical research.

Background

An effective strategy for bridging the gap between research and library practice and meeting the demands of the data-intensive environment requires strengthening the research skills of library practitioners. Library professionals need practical skills in designing and carrying out research projects as they are not only consumers

of current research, but also active contributors to scholarship in the LIS field. Librarians gather evidence to evaluate services and to inform the development of new programs. Researcher-practitioners conduct empirical studies of user needs, information seeking behavior, and information use practices. Research in the library and information science (LIS) field indicates inadequate training or inconsistent education in research methodology across LIS programs and scarcity of studies examining this issue in international context (Alemanne and Mandel 2018; Berg, Hoffmann and Dawson 2009; Evans, *et al.* 2013; Luo 2011; Mandel 2017).

The data-intensive research environment creates demand for information professionals with knowledge of the research process and skills in managing and curating data. The European Union report estimates a need for half a million specialists with expertise in managing data (Ayris 2016). A recent survey of LIS graduates in the United States indicates a changing nature of library jobs in the "age of analytics" (Allard 2019, 32). LIS graduates are increasingly collecting, analyzing, and managing data and applying research skills in conducting assessment, usability testing, and empirical research projects.

According to the *Library Journal* 2018 Placements and Salaries Survey, user experience (UX) and usability analysis are becoming mainstream job responsibilities of newly hired library professionals (Allard 2019). Usability testing requires a good understanding of research design and user experience, and skills in collecting and analyzing data on user interaction with information systems. However, few LIS programs offer coursework in the areas of assessment and usability. Fleming-May *et al.* (2018) present a grant-funded project focused on developing a specialized curriculum for preparing information professionals with assessment and UX expertise.

Assessment and evaluation studies have been identified as areas of growing focus because of demands for accountability and the movement towards evidence-based library practice. Librarians in both public and academic library settings are involved in the design and execution of evaluation and assessment projects (Applegate 2016). A number of studies examined competencies for

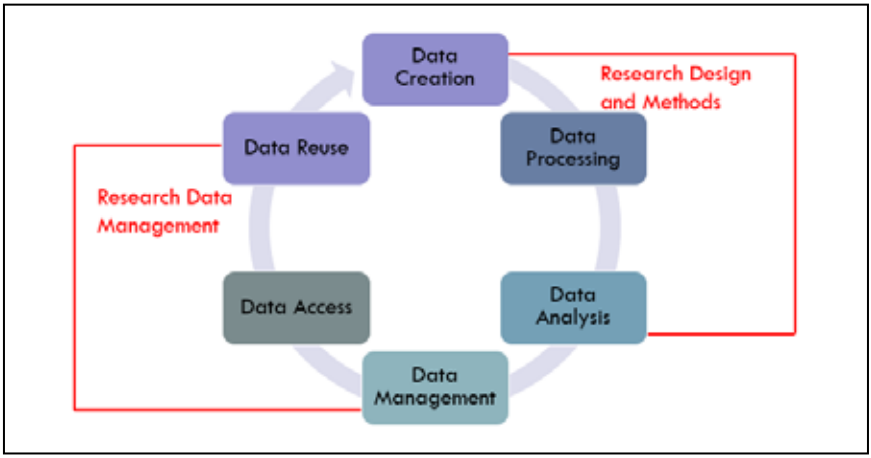
assessment librarians and demonstrated the demand for emerging skills (Applegate 2016; Dole 2013; Passoneau and Erickson 2014). Passoneau and Erickson's (2014) analysis of job postings identified research methods, statistical and analytical abilities, as well as project management and communication skills as the core set of competencies. The situation with educating future assessment librarians is similar to that in training library UX specialists. Few LIS programs offer separate courses in assessment or incorporate an evaluation component into research methods classes.

Moreover, the emerging area of research data management (RDM) requires library professionals to have a good understanding of research methodology across disciplines. Academic libraries in many countries are developing new services to actively support scholars in managing research data and in providing access to datasets (Cox and Pinfield 2014; Cox, *et al.* 2017; Tenopir, *et al.* 2015; Tenopir, *et al.* 2019). Researchers note the emergent character of RDM services, especially in circumstances where the roles and responsibilities of information professionals are not well defined (Corrall 2014; Heidorn 2011). While the need for educating a new class of data experts is broadly acknowledged, there is limited agreement on specific competencies, roles, and qualifications. Faniel and Connaway (2018) examine librarians' RDM experiences, specifically the factors that influence their ability to support researchers' needs. In a recent survey of academic librarians in Canada and the United States, Tenopir *et al.* found that a majority of respondents, who have research data services (RDS) as their primary job responsibility, agree that they "have the skills, knowledge, and resources available to provide or develop RDS" (Faniel and Connaway 2019, 28). However, the assessment of the level of skills is lower among the librarians who engage in delivering RDS occasionally.

The concept of data life-cycle plays a central role in developing and organizing research data services (Carlson 2014). The data lifecycle models are useful tools in planning and developing data management services and in visualizing the phases in the research process. They also provide a useful framework for identifying different sets of skills and competencies.

Figure 1, based on the early UK Data Archive research data lifecycle model, identifies basic stages in creating, processing, analyzing, managing, accessing, and reusing research data. The modified diagram adds another layer and aligns skills and competencies in 1) research design and methods, needed to create, process, and analyze data in empirical and applied research, and 2) in research data management to support researches in managing, disseminating, and reusing data. This model is relevant to the discussion about the gap between research and library practice and educating library professionals as it points to two different, although interrelated sets of skills in conducting research and in managing data.

Figure 1.



Modified diagram of research data life-cycle with the identification of research design and data management skills. Based on the UK Data Archive Research Data Lifecycle Model.

This framework also provides a good starting point for presenting the IFLA LTR research projects. The Data Curation Project examined educational qualifications and competencies in data curation/research data management. The second project, LIS Education in Research Methods focuses on educating library professionals in

creating, processing, and analyzing data. Both projects are closely aligned with the mission of the IFLA Library Theory and Research (LTR) section that promotes the continuing development of library and information science through theoretical and applied research.

IFLA LTR Data Curation Project

The primary goal of the IFLA LTR project was to identify the roles and responsibilities of practicing data curators and RDM librarians around the world. The study was designed using a mixed-method approach and was conducted between 2016 and 2018. The main objectives of the project were:

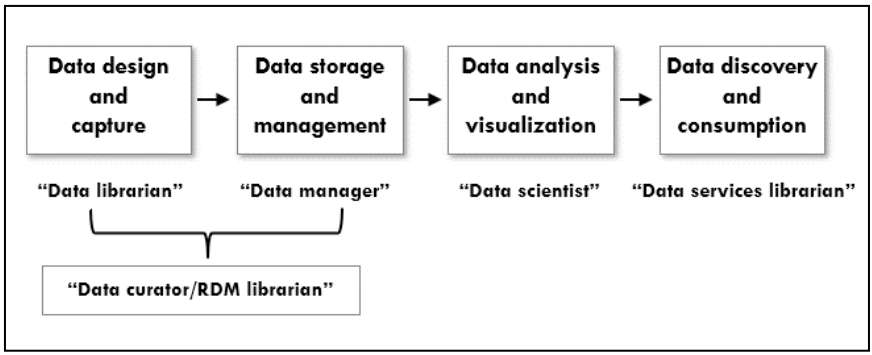
- To examine the terminology used to describe the emerging practices and new professional roles
- To understand the roles and responsibilities of data curators and RDM librarians.

This section provides a brief summary of the findings as they relate to professional skills and competencies. A full description of the project can be found in the previous publications (Matusiak 2020; Matusiak and Sposito 2017; Tammaro, *et al.* 2019).

The study was designed using a sequential mixed-methods approach with a combination of quantitative and qualitative strategies (Creswell 2014). It included two phases of data collection and multiple sources of data. The first phase concentrated on quantitative content analysis of job announcements derived from a variety of library and information science job posting sites, including the International Association for Social Science Information Services and Technology (IASSIST), and Code4Lib. The data set included 441 job advertisements with postings from the United States (U.S.) and 32 other countries. In the qualitative phase, semi-structured interviews were conducted with 26 library professionals working in research data services in Australia, Canada, the U.S., and six countries in Western Europe.

The study found limited agreement on vocabulary and titles for people who are involved in providing research data services. The variability of titles and an infrequent use of the term "data curator" were found both in content analyses of job announcements and in qualitative data. The positions were frequently advertised under a wide variety of titles often with additional data-related responsibilities, such as data science or data references services *(Figure 2).*

Figure 2



Stages in the research cycle and professional roles. The diagram prepared by the project team member, Frank A. Sposito.

As demonstrated in *Figure 2,* data curators or RDM librarians are working with researches in the early phases of research design and creation, and towards the end of the cycle in storing and managing data. The LTR project provided a useful distinction between rdm librarians and data scientists and clarified their roles. RDM librarians assist researchers in managing data throughout the research cycle. Data scientists are a distinct role associated with data analysis and visualization. The study also found a more traditional library role of data services librarians assisting researchers in data discovery and access. A degree in librarianship was required in only 27% of the job advertisements but the degree requirements varied across different data positions *(Table 1).*

Table 1

	Data librarian		*Data manager*		*Data scientist*		*Data service librarian*	
Degree	**Count**	**Pct**	**Count**	**Pct**	**Count**	**Pct**	**Count**	**Pct**
MLIS	86	34.5%	60	28.8%	11	25.6%	30	42.9%
PHD	16	6.4%	16	7.7%	4	9.3%	6	8.6%
BA/BS	5	2.0%	9	4.3%	5	11.6%	1	1.4%

Degree requirements.

The interview participants across institutional and national settings emphasized that their primary roles and responsibilities involved assisting researchers in meeting funder requirements, improving data management practices, and ultimately contributing to a more efficient research process and better-quality data. All professionals participating in this study were engaged in consultative services, outreach, and open access advocacy. A smaller number of participants assisted researchers with technical aspects of depositing data in repositories and archival storage. Many participants described their roles and responsibilities in the context of the data lifecycle. Consultative and training services would usually take place at the beginning of the cycle and focus on developing data management plans (DMPS) and practices in sharing and archiving data.

Understanding of the research process and expertise in research methods emerge as important competencies for professionals working in research data services. Library practitioners, who work with faculty and assist them in managing and preserving research data, emphasize the importance of having hands-on experience in conducting empirical research and the ability to "talk the research talk" (Tammaro, *et al.* 2019, 102) Librarians with research background find it easier to build credibility and establish trust with researchers, as pointed out by Participant I, "It is really helpful when I go to speak to groups and do sort of educational awareness, to have a good background in research methods

to draw on, so I think it's then not so quickly dismissed because I have an understanding of what it is they are trying to do in terms of their work" (Tammaro, *et al.* 2019, 102).

The findings from the Data Curation Project provided a foundation for designing the new LTR project focused on LIS education in research methods. If expertise in research methods and understanding how data is generated is important for the emerging library roles, we need to know more about how future library professionals are being prepared for this data-intensive environment.

LIS Education in Research Methods

The new LTR project, initiated in 2019 focuses on improving the training of library professionals in research and evaluation methods. The activities encompass an international study investigating library and information science (LIS) education in research methods and practice-oriented workshops. The goals for the project are twofold. First, to conduct an international study investigating library and information science (LIS) education in research methods to examine how library professionals are prepared to conduct research and assessment studies in different countries. There is almost no international comparative research examining how library professionals are being prepared for the global data-driven environment where practitioners are increasingly expected to engage in assessment, research data management, and empirical research. The second objective is to provide practical training in research design and selecting research methodologies for library practitioners in different parts of the world. The second goal will be realized through regional workshops and webinars.

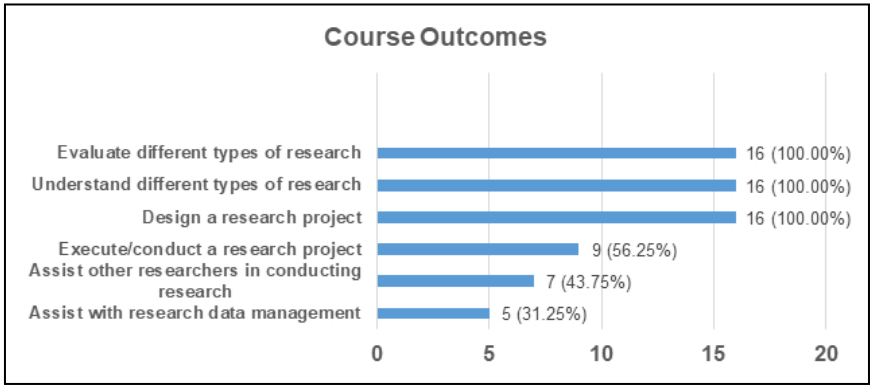
The LTR team conducted a pilot study in the United States in 2019. The purpose of the study was to examine teaching research methods courses in library science professional education and to investigate how Library and Information Science Master's (MLIS) level programs are preparing future library professionals to be consumers of research and practitioner-researchers. A mixed-methods

approach to data collection and analysis was employed. This study focused on the MLIS programs accredited by the American Library Association (ALA), with data collected from three sources: LIS program websites; Master's level research method course syllabi; and questionnaires and interviews with 15 faculty teaching LIS research methods courses at the Master's level.

The study finds that the education of library professionals on the Master's level is limited to a single course in research methods. Content analysis of LIS program websites indicated that 50 of the 52 programs (96.15%) offer at least one research methods course in their curriculum. Only three programs (5.77%) were found to offer more than one research methods course. The findings from the program website analysis were confirmed by the 2018 alise Report where 59% (32 out of 54) LIS programs reported offering a course in research methods as part of the core curriculum in the previous year (ALISE, 2018). However, the interview sample presented a different picture with 13 out of 15 (86.67%) interview participants teaching courses that were required.

Most of the analyzed courses were designed as overview courses with an introduction to different methods but offering a limited number of hands-on components. In the interview sample, only six out of 15 courses (40.00%) were centered around empirical research projects or incorporated activities in data collection and analysis. Two types of assignments emerged as dominant in the analyzed courses: a critique of a research publication and a research proposal, which was often a cornerstone assignment in many classes. In a few courses taught by the interview participants, students engaged in a research project to explore a problem or to evaluate a program. The course outcomes focus primarily on the skills in understanding the research process and evaluating publications in terms of methodology. *Figure 3* presents a summary of the course outcomes.

Figure 3



Course outcomes. This chart shows the student outcomes faculty felt their courses addressed. (N = 16 courses)

This pilot study finds that the current educational model in LIS prepares library professionals to be competent consumers of research but is limited in training researcher-practitioners for conducting academic research and for emerging areas of practice. It also demonstrates a significant variety of instructional designs, inconsistent training in research methodology, and limited incorporation of hands-on research activities. The teaching faculty are often dissatisfied with a single overview course and expressed interest in experiential learning and designing courses relevant to practice. Preparing students for new professional roles in assessment, usability testing, or research data services requires changing curricular models and offering a wider selection of specialized research methods courses. The full reporting of the pilot study findings is available in the forthcoming paper (Matusiak and Bright 2020).

The pilot study focused on U.S. Master's level LIS education, which is unique in an international context as it does not require a prior LIS or research background. The LTR team plans to expand the investigation and compare the findings from this study

to curricular models in other countries. The next steps in the LTR project involve using the pilot findings to inform the design of a mixed-methods study to gather data on the approaches to teaching research methods in LIS programs and training library professionals in different countries. The study will include an international survey, content analysis of teaching materials, and interviews with LIS educators and practitioners in multiple countries. This project will contribute new comparative data on research methods education internationally and will inform LIS educators on the different models for preparing researcher-practitioners and professionals for global evidence-based librarianship. In addition, the LTR team plans to collect examples and case studies of best practices in teaching research methods and training library professionals to conduct research and evaluation.

CONCLUSION

The library landscape has changed dramatically in the last twenty years with new specialties emerging that require knowledge of the research process and skills in managing data and conducting research. Bridging the gap between research and practice communities is more pertinent than ever but now encompasses many new data-intensive areas. Library practice is becoming more research-oriented with librarians undertaking evaluation or usability studies or engaging in research data services to assist other scholars. The new data-driven environment requires a broader discussion of the place of research methods in the LIS curriculum if we want to prepare library professionals to work confidently in the field and be active contributors to research and competent UX experts, program evaluators, and data managers. The IFLA LTR section contributes to this discussion through its research projects, encouraging international collaboration, sharing of best practices in educating library professionals, and building a body of new comparative research.

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La bibliotecología, como área que se dedica al estudio del conocimiento intencionalmente registrado, tiene dos vertientes: la profesional y la disciplinar. En cada uno de esos territorios, el practicante y el investigador de la bibliotecología hacen tanto una labor loable como aportes sustanciales; sin embargo, practicante e investigador pocas veces se observan y complementan. Hay diversos trabajos que han tocado el problema de la división o brecha entre práctica e investigación en bibliotecología; aun así, la convergencia entre ambas no se nota, por lo que ésta sigue siendo un tema pendiente.

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