

Teaching Research Methods in Master's-Level LIS Programs: The United States Perspective

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Training in research methodology is an essential component of educating twenty-first century information professionals and library practitioners. Traditionally, competencies in library and information science (LIS) education emphasized the fundamental knowledge of research methods and critical skills in evaluating the findings. However, librarians are not only consumers of research; they are also active contributors to scholarship and need practical skills in designing and carrying out research projects. Research competencies, including the fundamentals of quantitative and qualitative research methods, are listed in the American Library Association's (ALA) Core Competences of Librarianship. Courses in research methods are offered in many LIS programs in the United States but are not always considered part of the core curriculum. Training in research methodology is inconsistent across LIS programs and in Master's-level courses rarely goes beyond an overview of methods and terminology. This article summarizes the findings of a study that examined the current state of research methods training in LIS Master's-level education in the United States and investigated how future library professionals are being prepared to be consumers of research and practitioner-researchers from the perspective of the faculty who teach the courses. The data for this study were collected using multiple techniques, including content analysis of documents, questionnaires, and semi-structured interviews. Teaching faculty, selected from ALA-accredited LIS programs, contributed their perspective through questionnaires and semi-structured interviews.

Keywords: LIS curriculum, LIS education, LIS practitioners, LIS programs, research methods

Courses in research methods are part of the curriculum in Master's-level library and information science (LIS) programs, reflecting the core competencies and accreditation standards in the field (ALA, 2009, 2015). Traditionally, competencies in Master's LIS (MLIS) education emphasize understanding of empirical research, basic knowledge of research methods and statistics, and critical skills in evaluating scholarly publications (Powell, Baker, & Mika, 2002; Smith & Adams, 1992; Stephenson, 1990). The curricular model tends to focus on preparing library professionals to be critical consumers of research, but the discussion about the gap between research and practice in LIS and expanding professional roles

KEY POINTS:

- A dominant curriculum model in LIS Master's education is a single course in research methods.
- The research methods courses in the LIS Master's programs are designed as overview courses with a limited number of hands-on components.
- Training in research methodology is inconsistent across LIS programs and inadequate for preparing researcher-practitioners and professionals in emerging areas of practice.

points to the need to educate librarians as researchers (Berg, Hoffmann, & Dawson, 2009; Haddow & Klobas, 2004; Luo, 2011).

LIS practitioners not only read research articles but also actively contribute to scholarship. Researcher-practitioners conduct empirical studies of user needs, information-seeking behavior, and user perceptions of library programs and services (Luo, 2011). They gather evidence to inform the development of new library policies and services. At many institutions of higher education, academic librarians in tenure-track positions are expected to conduct research and publish in peer-reviewed journals (Berg et al., 2009; Kennedy & Brancolini, 2012, 2018). Librarians in both public and academic library settings are involved in the design and execution of evaluation

and assessment projects (Applegate, 2016). Berg and Banks (2016) recognize the growing capacity of library professionals for conducting research projects and call for embracing “the notion that we can do research” (p. 471).

In the “age of analytics,” recent LIS graduates are increasingly collecting, analyzing, and managing data (Allard, 2019, p. 32). According to the *Library Journal's* 2018 Placements & Salaries survey, user experience (UX) and usability analysis are becoming mainstream job responsibilities of newly hired library professionals (Allard, 2019). Usability testing requires skills in collecting and analyzing data on user interaction with information systems. Moreover, the emerging area of research data management (RDM) requires library professionals to have a good understanding of research methodology across disciplines. RDM 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, Matusiak, Sposito, & Casarosa, 2019).

LIS curriculum is supposed to be revised regularly to keep it current (ALA, 2015). There is an ongoing discussion about responding to the changing information technology environment (Goodsett & Koziura, 2016; Henry, 2015; Raju, 2017; Saunders, 2015). However, very little is known about how research methods courses are designed and taught in response

to the demands of a data-driven environment and expectations of librarians to use data in practice and conduct research. This article presents the findings of a study that examined the current state of research methods training in MLIS education in the United States and investigated how future library professionals are being prepared to be consumers of research and practitioner-researchers.

Literature review

The curriculum of MLIS programs typically comprises both core and elective courses, although what is part of the core set varies from program to program. The core curriculum is intended to provide future professionals with substantial theoretical knowledge, essential competencies and skills, and an understanding of professional values and ethics (Hall, 2009; Lynch, 2008; Matusiak, Stansbury, & Barczyk, 2014; Saunders, 2019). The adoption of information technology and the evolving profession resulted in significant changes in the curricula of accredited programs in the 2000s. The number of core courses in cataloging, collection management, and reference has declined, while technology-oriented and research methods courses have increased (Hall, 2009). In 2018, 32 (59%) ALA-accredited programs required a research methods course and 22 (41%) programs offered one as an elective (ALISE, 2018).

The curriculum design of ALA-accredited MLIS programs is guided by the *Standards for Accreditation* (ALA, 2015). This document states that the curriculum should reflect the findings of basic and applied research and that programs ought to provide students with “opportunities to participate in research” (ALA, 2015, p. 7). LIS curricula are also informed by the general and specialized competencies developed by professional organizations in the field. The *ALA Core Competencies of Librarianship* show ALA’s recognition of research as an essential competency and provide a foundation for LIS curriculum development. The research core competencies are described broadly and cover “fundamentals of quantitative and qualitative research methods,” “central research findings and research literature of the field,” and “principles and methods used to assess the actual and potential value of new research” (ALA, 2009, p. 4).

The guidelines published by other professional associations tend to be more specific. The Association for College and Research Libraries (ACRL) issued guidelines for assessment librarians and coordinators, with five out of eleven proficiency areas directly related to conducting research and assessment studies: ethics, assessment methods and strategies, research design, data collection and analysis, and communication and reporting (ACRL, 2017).

Competencies in conducting evaluation research and an ability to apply research skills in practice are also recognized as core by practicing

information professionals. Library practitioners report that taking a research methods course in the LIS program not only increases their interest in research but also helps them in many aspects of their jobs, including assisting patrons, evaluating published research, conducting research and writing papers for publication, and grant writing (Luo, 2011). In a recent nationwide survey focused on knowledge, skills, and aptitudes in LIS, at least one-quarter of respondents ranked skills in evaluation research, reporting basic descriptive statistics, and basic data-collection methods as core (Saunders, 2019).

Expertise in assessment is becoming increasingly more important, as libraries respond to demands for accountability and work toward building a culture of assessment (Malenfant, Hinchliffe, & Gilchrist, 2016; Oakleaf, 2010). A number of studies examined competencies for assessment librarians (Applegate, 2016; Dole, 2013; Passoneau & Erickson, 2014). Position announcements often demonstrate the demand for emerging skills. Passoneau and Erickson's (2014) analysis of job postings identified research methods, statistical and analytical abilities, and project management and communication skills as the core set of competencies. In the case of assessment, support of LIS professional education is still limited. Applegate (2016) comments on a mismatch between the need for evaluation skills and the formal opportunities to obtain those skills. Few LIS programs offer separate courses in assessment or incorporate an evaluation component into research methods classes. Fleming-May et al. (2018) present an exception in the form of a grant-funded project focused on developing a specialized curriculum for preparing information professionals with assessment and UX expertise.

A specialized or diversified approach to research methods education in LIS programs is rare. A typical curricular model includes one required or elective research methods course that introduces research design and frequently used methods in LIS (Evans, Dresang, Campana, & Feldman, 2013; Luo, 2017; Mandel, 2017). Evans et al. (2013) summarize the limitations of the traditional approach, including an inadequate number of research courses, especially advanced ones, a focus on one methodology (survey), and the lack of student participation in authentic research. The authors present a model developed at the University of Washington iSchool that includes a sequence of two classes and a mix of classroom learning and authentic practice. A small number of LIS programs depart from the model of one introductory course and offer a selection of specialized research methods courses. Luo (2017) presents the case of San Jose State University, where LIS students can select from ten different classes to fulfill the requirement. The diversified curriculum includes a basic overview course but also several specialized courses.

The relevance of research methods education to the field of practice is a major theme in the discussion of the effectiveness of teaching research

methods in LIS programs (Alemanne & Mandel, 2018; Luo, 2011, 2017; Mandel, 2017). Recently, authors have embraced the concept of researcher-practitioners and have explored different pedagogical approaches that can effectively prepare LIS professionals for engagement with research. The discussion acknowledges some of the challenges of teaching research methods, such as the complexity of training professionals across many specializations in the LIS domain (Luo, 2011, 2017) or students' lack of prior experience in research and anxiety about the course (Alemanne & Mandel, 2018; Mandel, 2017). The lack of hands-on experience with research is also a recognized limitation of research methods coursework in LIS (Berg et al., 2009; Evans et al., 2013; Luo, 2011; Mandel, 2017). LIS educators try to address these challenges through innovative pedagogical approaches and incorporating hands-on components (Alemanne & Mandel, 2018; Mandel, 2017).

This article contributes to the ongoing discussion of curriculum design and pedagogical approaches to teaching research methods in Master's-level LIS programs. It presents the findings of an empirical study that used multiple sources of data and included views of faculty who teach research methods courses in MLIS programs in the United States.

Study design and methods

The purpose of this study was to examine teaching research methods courses in library science professional education and to investigate how MLIS programs are preparing future library professionals to be consumers of research and practitioner-researchers. The following research questions were developed for this study:

- R1: What research methods courses are offered in the Master's-level LIS programs?
- R2: What are the primary objectives for the required or elective courses in research methods?
- R3: What are the scope and content of the courses in research methods courses?
- R4: What models are adopted in teaching the courses?

In order to address the study's research questions, a mixed-methods approach to data collection and analysis was employed. This study focuses on US-based, ALA-accredited MLIS programs, with data collected from three sources: LIS program websites, Master's-level research method course syllabi, and questionnaires from and interviews with faculty currently teaching LIS research methods courses at the Master's level.

Data collection

Survey of LIS program websites

To identify base information about research methods courses in US-based, ALA-accredited LIS programs, a survey of programs was completed. LIS

program websites were reviewed, and if a course was identified, the following information about the course and the program was collected: course required (core) or elective, credit hours, prerequisites, semester or quarter system, course description, availability of course syllabus, and when the course was taken.

LIS faculty interviews

To gain a first-hand perspective on how research methods are currently being taught at the Master's level of LIS programs, a series of semi-structured interviews were conducted with fifteen faculty members currently teaching these courses.

Sample

The sampling frame for this study consisted of all faculty who could be identified as having taught a research methods course at the Master's level for an LIS program within the last three years (2016–2019). The sampling frame list was created by reviewing website information about faculty in each program and identified 111 potential participants. Information about each potential participant, including name, e-mail address, and program, was placed into an Excel file. The list was alphabetized by program and each potential participant was numbered from 1 to 111. Using the list randomizer provided by random.org, the numbers were randomized and the list was reordered based on this process. From this list, the first sixteen names from non-duplicated programs were selected, with each researcher taking eight names and proceeding to contact the faculty members to invite them to participate in the study.

The initial recruitment wave yielded seven participants. Second and third waves of recruitment followed, with the researchers moving through the randomized list to contact sets of 16 faculty members each time. Fifteen faculty members agreed to participate. The researchers felt that the 15 interviews would offer a broad spectrum of teaching and program experiences. Also, given the timeline of the study (during the summer and fall), the researchers were pleased to find 15 available faculty members. Prior to participating in an interview, participants were asked to complete a short questionnaire (see Appendix A) to gather data about their specific research methods courses, with 13 out of 15 participants submitting responses about 16 different courses.

Semi-structured interviews

Each interview was conducted online via Zoom or WebEx, between June and November 2019. The interviews were guided by a semi-structured interview protocol (see Appendix B). All interviews were recorded and transcribed.

Course syllabi

The final means of data collection came from the course syllabi that were collected from the websites of LIS programs and from the faculty members who participated in interviews. Thirty course syllabi were analyzed for the purpose of this study. The syllabi of the courses that focused primarily on research methods were included. Other topical LIS course that may have research methods components, for example literacy instruction or academic libraries, were not analyzed. These syllabi offered additional details and information about the structure of the courses being taught, while also serving as a means of data triangulation for the researchers.

Data analysis

Data collected from the different sources were analyzed individually first, and then compared to help create a complete picture of how research methods are currently being taught at the Master's level in US-based, ALA-accredited LIS programs. In order to address the research questions, a combination of data quantizing and content analysis of collected data and qualitative data analysis of interview transcripts was conducted.

Quantitizing and content analysis

Both quantitizing and content analysis techniques were applied to the data collected from the survey of LIS program websites, handbooks, and syllabi, as well as the syllabi received from the interview participants. Quantitizing of the qualitative data was done to create a general overview of the research methods courses offered by LIS programs. This process involved categorizing and counting data based on explored topics, including required or elective status and number of courses offered (Cohen, Manion, & Morrison, 2018). Content analysis, a method of summarizing the collected data (Cohen et al., 2018), was also applied, particularly to the syllabi collected during the survey and those provided by participants.

Qualitative data analysis

Analysis of the interview data followed a process of reading and re-reading transcripts, multiple rounds of coding, and thematic analysis. Both researchers read and reviewed the interview transcripts multiple times.

Interview coding

An initial list of possible *a priori* codes (Creswell, 2013), based on reviewed literature and the interview protocol categories identified by the researchers, was created and used for the first round of transcript coding. As the literature review was used to guide the development of the interview protocol, the categories used in the protocol were a logical starting point for both initial codes and possible overarching themes. These categories

included the instructor's background (research and teaching), course design, course outcomes, information about students, and information about the program or department. Within these categories, specific concepts such as how often the course was offered, whether it was required or elective, and the types of assignments, became *a priori* codes. The researchers created a shared document to build this initial list of possible codes, working collaboratively to add and remove items prior to the start of the coding process.

Dedoose, an online application that allowed the researchers to code the transcripts collaboratively (dedoose, n.d.), was utilized for transcript analysis. The initial master list of codes was entered into Dedoose to aid in the coding process. Additional, emergent codes were identified by both researchers throughout the process and added both to Dedoose and the master code list. Many of the emergent codes were *in vivo* codes that reflected the words of the respondents (Creswell, 2013).

The researchers worked independently to code the transcripts, both starting with the interviews they had conducted. Each researcher also coded the transcripts of the other interviews, cross-checking codes for agreement. No disagreements in coding were found, as each researcher agreed with the codes that had been applied to specific transcript passages. In some cases, an additional code may have been applied to a previously coded passage to indicate an additional perspective on the passage; or an emergent code may have been identified based on the participant's choice of words. Several conversations to discuss and review coding were held throughout the coding process, and updates were made to codes as needed. Dedoose analysis features were applied to the coded transcripts, allowing the researchers to identify frequency of codes both within and across transcripts, as well as proximity of codes that appeared together within transcripts.

Thematic analysis

Following identification and application of codes to the transcripts, further analysis was completed to identify possible themes within the data. This process, aided by the Dedoose analysis features, allowed for different "patterns of meaning ('themes')" to be identified within the data (Clarke & Braun, 2017, p. 297). While some themes aligned with the categories identified during the literature review and interview protocol development, additional themes emerged from the analysis of the data, offering "a framework for organizing and reporting" the finding of the study (Clarke & Braun 2017, p. 297).

Data triangulation

As this study collected multiple types of data from different sources (program website analysis, survey data, content analysis of syllabi and interview data), data triangulation offered an additional method for investigating

and understanding the data. Review and comparison of the pre-interview survey data to the interview transcripts allowed the researchers to confirm aspects of course design and structure as shared by the participants; comparison of data from program website analysis and interview transcripts allowed the researchers to confirm aspects of course importance and status within the programs; and comparison of course syllabi, pre-interview survey data, and interview transcripts allowed the researchers to confirm aspects of course design, assignments, and teaching approaches. These comparisons allowed for the extension of the coding and thematic analysis processes, where both codes and themes could also be applied to data collected through non-interview methods. This allowed for additional categorization of findings for data analysis and presentation.

Findings

Analysis of the data collected in this study allowed the researchers to address the four main research questions. The results are based on the analysis of three sources of data: documentary evidence from LIS program websites, course syllabi, and questionnaires and interviews with 15 faculty teaching research methods courses. This section offers findings related to the research questions, as well as additional findings from the analysis of interview data. While the additional findings do not directly address the research questions, these findings were seen as relevant to the overall study and investigation of how research methods are being taught in US Master's-level LIS programs.

Interview participants

The interview participants were recruited from 15 different LIS programs in the United States. They represented different academic ranks, including full professors (5), associate professors (7), assistant professors (2), and a clinical assistant professor (1). For 13 of the respondents who provided the information, there was a wide range of years of teaching experience, including 1 year (2), 5 years (2), between 11 and 13 years (4), 19 years (1), 20 years (1), and more than 20 years (2). The research courses they teach are offered primarily online, with four participants teaching onsite or in a hybrid format. Most (13) relied on a combination of purchased textbooks and selected readings (articles and book chapters), and only one indicated using a free textbook, Open Educational Resource (OER). Demographically, participants identified as Asian (4), Hispanic, Latino, or Spanish Origin (3), White (5), and Black or African American (1); two chose not to identify. There were nine females and six males.

Courses offered

Required versus elective

Content analysis of LIS program websites indicated that 50 of the 52 programs (96.15%) offered at least one research methods course in their

curriculum. Only three programs (5.77%) were found to offer more than one research methods course. Whether a course was required or elective was nearly a 50-50 proposition, with 30 programs (57.69%) requiring their course and 25 (48.08%) offering it as an elective. In one program, the course could be required or elective depending on which course plan the student selected. Most courses were worth 3 credit hours, with only four programs (7.69%) offering 4-credit-hour courses. Most programs (48; 92.31%) offered their course over a semester, with only eight (15.38%) teaching over a quarter.

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. In many cases, the courses had been required for a long time, but in other programs, the course changed to “required” as a result of a curriculum redesign process.

Timing of completion

Only a few programs’ websites explicitly indicated when students should take the research methods course. Nearly 40% of identified research methods courses did require at least one pre- or co-requisite, suggesting a later placement in the course sequence. Interview analysis provides some insight into this aspect of courses, though arguments for completing earlier or completing later in the program were both offered. Participant C indicated that their program required students to complete the course in either their second or third semester, as they felt it would “help them be better practitioners of material and other classes so they could read journal articles and somewhat understand what was happening in them.” Support for later completion came from Participant J, who suggested that while students expressed an interest in taking the course earlier, the program had a sound reason for having them take it later in the program:

our intention was to allow students to apply what they had learned throughout their . . . experience at solo research during their MLS degree. So that they could then develop a research proposal, which is the . . . culminating project for the course. Whereas, if we had offered this earlier to them, they may not have enough experience or familiarity with the field to be able to construct a coherent research proposal.

Some participants indicated recent changes in when they had students take the course or ongoing discussions about timing of the course. Participant E’s program originally had students take the course in their first semester with their foundations class. However, they found that “it was

feeling really overwhelming to the majority of our students to take it in the first semester.” Participant D suggested that their program was looking to move the course to earlier in the program: “We have traditionally offered it at the end, but we are thinking about changing that, because our students are telling us that they thought it would have been better for them, had they taken it at the beginning of the program.”

Course titles

Reviewing course titles reveals more similarity than difference and a variance on a theme. In the analyzed sample of 30 course syllabi, 24 (80%) were general courses, providing an introduction to research methods, while six courses (20%) were more specialized. Of the courses identified from the website analysis ($N = 56$), many were simply titled “Research Methods” ($n = 14$; 25%), with slight variations for “Research Methods for . . .” or “Research Methods in . . .” ($n = 12$; 21.43%), “Research for . . .” or “Research in . . .” ($n = 7$; 12.5%), “Introduction to Research” or “Introduction to Research in . . .” ($n = 5$; 8.93%). Some courses were titled based on specialized topics or research methods, including “Social Network Analytics,” “Applied Research Methods - Survey Research,” and “Understanding Users: User Experience Research Methods.” Only four courses (7.14%) bore titles emphasizing research methods outside of library and information science: two that focused on social science research, one focused on educational research, and one focused on research methods in health informatics and learning systems.

Primary objectives

COURSE PURPOSE

In the pre-questionnaire, most respondents indicated that their courses had the dual purpose of offering a survey of research methods and offering an opportunity for students to apply specific research methods (see Figure 1).

COURSE OBJECTIVES

The content analysis of the course syllabi collected for this study enabled the identification of not only objectives that were shared across the MLIS programs but also those less common ones that indicated more practice-oriented goals and innovative teaching approaches. The primary focus of the course objectives is to prepare students to become critical consumers of research. The common set includes the following:

- analyze, critique, and evaluate methods and findings from current library and information science literature;
- assess the strengths and limitations of particular research tools and methodologies;
- become familiar with the various research methods commonly used in the field;

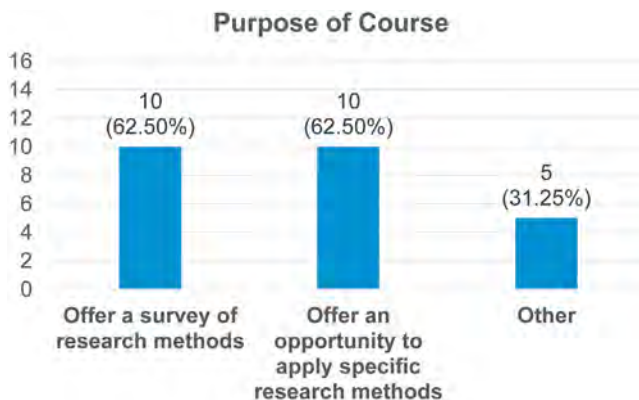


Figure 1: Overall purpose of the course as indicated by participants in the pre-questionnaire ($N = 16$ courses)

- describe the importance of research to the practice of library and information science;
- discuss ethical issues involved in conducting research; and
- identify a research problem and associated research questions and design a research project.

The less common course objectives tend to focus on practical skills in conducting assessment, designing research projects, collecting and analyzing data, and reporting findings. The infrequent course objectives include the following:

- apply research methods to the assessment, evaluation, design, and management of library and information science services;
- develop competence in data collection and analytic methods;
- develop competence in data interpretation and reporting;
- practice applying basic research design techniques such as survey design and qualitative coding;
- apply basic statistical methods to analyze quantitative data; and
- have fun while exploring and learning about research methods.

The objective on “having fun” appeared only once but is highlighted here because of the major theme that emerged from the interviews on students’ negative perceptions of the course and faculty’s conscious efforts to change those attitudes.

The interview data shed more light on the findings from the course syllabi analysis. Most faculty interviewed ($n = 11$ out of 15; 73.33%) agree that the primary objective is to equip students with skills to understand and evaluate published research, as described by Participant G: “at least [. . .], they would read some research product, right. So what is the

journal article or anything so evaluating really a research product is, to me, that's the main goal." Some of the interviewed faculty were hesitant when discussing students' skills in conducting research. They pointed out the limitations of a singular course and expressed reservations about the ability to introduce students to research methods and teach them practical skills at the same time. Participant B stated, "definitely one class is not sufficient to get them to that level, that they will be able to say, conduct original research."

Responses to whether faculty felt they were successful in meeting course objectives varied. Some participants felt that students were able to understand and analyze the research of others. Both Participants P and R noted seeing evidence of students' ability to meet the objective in their final proposals. Participant P did note that "not everybody achieves them to the level that I would like but . . . most students actually do pretty well. And really what's amazing to me is where they're starting out from to where they end up."

Scope and content

The analysis of the course syllabi and interview data demonstrates a variety of content, instructional designs, and assignments. All courses taught by the interview participants provided an overview of quantitative and qualitative methods, but the emphasis varied, with some courses more focused on survey design or qualitative approaches. Mixed-methods design was rarely discussed, with only three interview participants indicating mixed methods as a topic they cover in their course. Six out of the 15 faculty interviewed (40%) indicated the inclusion of descriptive statistics. Some courses included hands-on exercises and quizzes in statistics. Several courses emphasized the discussion of ethical issues in conducting research and required students to complete the Collaborative Institutional Training Initiative (CITI) online workshop, including the courses taught by eight (53.33%) of the interview participants.

Most of the analyzed courses were designed as overview courses, with an introduction to different methods but a limited number of hands-on components. In the interview sample, only six out of 15 courses (40%) were centered on empirical research projects or incorporated activities in data collection and analysis. Participant I expressed dissatisfaction with the overview model and discussed their current work in redesigning the course to make it more relevant to practice: "This time around I really want them to acquire the abilities and the knowledge to do research in their positions from day one. So, when they get hired on at the university library, they can be ready to go with research agenda, know what a research question is, know about collect data collection."

Two types of assignments emerged as dominant in the analyzed courses: a critique of a research publication and a research proposal. In most classes, students were asked to review a scholarly article in the field

that reports the results of empirical research and evaluate it in terms of the stated research problem, research questions, and methodology. Research critiques were usually required in addition to a research proposal. In a few cases, a multi-part evaluation was a major assignment. Participant B cited the online format as a reason for moving away from a research proposal assignment, stating, “usually students are required to develop a research proposal as a final project and for the most recent one I taught online and I had to remove that assignment. Instead, all assignments [were] about a sort of evaluation of publications, about the different parts of the publication.”

A research proposal is a cornerstone assignment in many online and onsite classes. It is typically designed with a scaffolding approach. Students work on developing a proposal in several stages throughout the course, starting with identifying a research issue, conducting a literature review, developing research questions, and selecting appropriate research methods. A research proposal assignment is focused on designing a study and typically does not include actual activities in collecting and analyzing data, as explained by Participant F: “in research proposal assignment for a semester they come up with a proposal for literature review and the research design, but it does not require any data collection, they won't be able to do that now.” However, some instructors encourage students to identify problems in real-world environments and develop proposals that could be implemented later as part of an independent study, internship, or work.

In a few courses taught by the interview participants, students engaged in a research project to explore a problem or to evaluate a program. Interestingly, two interviewed instructors who had prior practical experience or research training in social sciences outside of LIS were the ones who included hands-on research activities within their courses. The instructors were strong proponents of experiential learning, as expressed by Participant C: “I'm a big believer in kind of learning by doing.” Participant D criticized the course design centered on the research proposal, stating, “I know a lot of people just have them, develop a proposal, they don't learn research that way.” The small sample of project-based courses identified in this study demonstrates a variety of approaches to providing practical experience in sampling, data collection and analysis, and reporting. There was no consistent model that could be identified across programs.

Teaching models

Student outcomes

In the pre-questionnaire, most respondents indicated that their courses had three main outcomes: evaluating different types of research, understanding different types of research, and designing a research project (see [Figure 2](#)). Less often selected were the outcomes of executing or

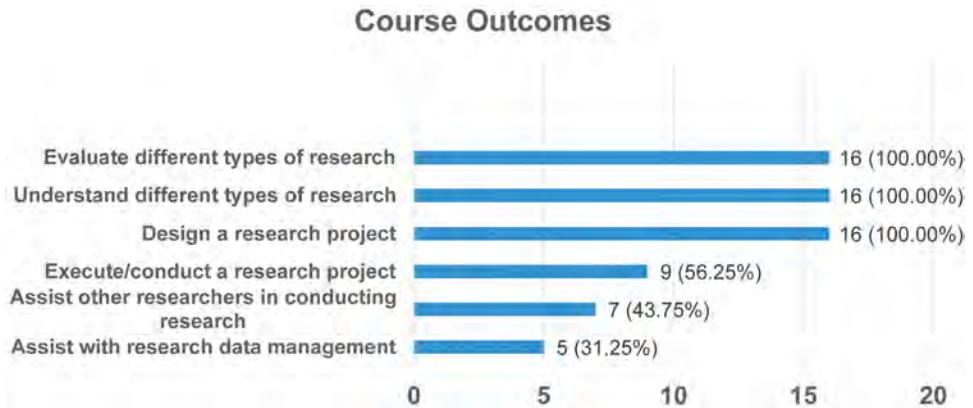


Figure 2: Student outcomes addressed by courses, based on faculty opinion ($N = 16$ courses)

conducting a research project, assisting other researchers in conducting research, and assisting with research data management.

The interviews provided insight into why some outcomes might be included while others were not as easily addressed. Some saw their course as introductory and did not feel that students had enough time or sometimes enough knowledge to actually conduct research as part of the course. As Participant G stated, “most of them take this course as an introduction to research methods. They probably need an advanced course where they have to really apply, conduct actual research, collect data, analyze . . . to take it to the next level.”

Student perceptions

One common theme from the interviews was students' perceptions of the course, which faculty reported ranged from lack of understanding of the course's purpose to fear and anxiety about the topic, to questions about the usefulness or necessity of the course. Two respondents reported that many students entered their course believing it was about searching for information. Participant P commented on students “thinking they're going to learn how to find stuff in the library.” Respondents also reported students who questioned the value and necessity of the course. Overwhelmingly, faculty felt that students were not interested in taking the course.

This lack of interest was often described with even stronger, more negative connotations, as faculty perceived students were anxious or afraid of the course, noted by eight out of 15 (53.33%) of participants. Participant H referred to it as “students having the anxiety or a relatively negative perception of research methods.” This sense was echoed by Participant A, who used similar terminology to describe it: “they come in

with an apprehension or a negative disposition toward research methods.” Other respondents referred to students as “nervous,” “scared,” or even “terrified.”

Faculty also felt that some students questioned the relevancy of the course to their future work. Participant I noted that students “don’t readily see the connection.” Participant J shared how many students would ask “why do I need to take research methods? I don’t like math. I’ve never liked math and . . . I’m never going to use this. I don’t want to be a researcher. So why do I have to take this class?”

Participant E likened the fear to even hearing the word “research”: “Most of them come in with like a completely terrified look on their face, and just hearing the word research sounds completely overwhelming and scary.” Some of the anxiety or nervousness perceived by faculty was assumed to be because of specific topics covered in the class, particularly statistics or math. As Participant J stated, “They are nervous about taking the course because when they see that there is a component dealing with statistics” Participant N talked about the need to “calm [students] down” when they were asked to use Excel as part of the class, and the idea led to stress for the students.

Respondents further connected the lack of interest and nervousness surrounding taking research methods courses to the backgrounds of the students. Only Participants O and R did not indicate that their students were concerned about the course or afraid to take it. For Participant O, the lack of fear was “because most [of] our students actually come from STEM background instead of social science background.” Participant R noted a change in the fear level of students, due to changes in the class: “when I started there was a lot of fear. That was also back when it was required. Once it went to being an elective where now people choose to be in that class, the fear level has gone down exponentially.”

Faculty pedagogical approach

Interviewed faculty talked about their pedagogical approach to the course, in response to negative student perceptions. Participant B indicated that they “do some sort of justification, why this course is needed. But for other courses, I usually don’t.” This indicates faculty recognition that teaching research methods courses may be a bit different compared to other courses in the program. As Participant A stated, “It was a class that was not very highly rated. It was a class that had a lot of problems and that students did not like very much.” Participant Q shared that they address student anxiety and “fear of numbers” as part of the course, letting them know “it’s okay, you can make mistakes” and giving completion rather than numerical grades for statistically based assignments. Participant H, while acknowledging students’ anxiety and fear as something “very common and natural,” also felt it was the “job as instructors to change that. We

shouldn't feel like just put off because of that anxiety. It's our job to figure out ways to . . . ease students into the process, to help them see the value of research methods”

For Participant J, the response to students questioning the necessity of the course was to provide context for them:

I try to put it in the larger context This helps you in your lifelong learning by being able to then evaluate research literature that you encounter over the course of your career. And then in your own workplace At some point, you're probably going to be asked to conduct things like a survey to determine the efficacy of the services that you're providing, or how you can better serve the community.

Participant R found that students were less likely to question the necessity of the course when they shifted to real-world collaborations. Students partnered with organizations to complete research projects “which not only showed that these agencies want to do research but that they didn't have the capability to do it on their own because they didn't learn to do it. And why it would be important to have these skills.”

Discussion

This study finds some consistency across LIS programs in adhering to the traditional curriculum model in research methods education but also demonstrates a significant variety of instructional designs, inconsistent training in research methodology, and a substantial divergence of opinions on timing the course, types of assignments, and incorporation of hands-on research activities. It confirms the findings from previous research about a dominant model with a single overview course (Evans et al., 2013; Luo, 2017; Mandel, 2017). However, it also finds some dissatisfaction with this approach and interest in experiential learning and designing courses relevant to practice, something that was discussed in the research literature (Alemagne & Mandel, 2018; Luo, 2011, 2017; Mandel, 2017). In this study, the majority of interviewed faculty (14 out of 15) represented programs where the research methods course was part of the core curriculum, appearing to represent the recent trend for most ALA-accredited programs. Only one participant reported that their program had removed the research methods course from the core curriculum and made it an elective.

Berg and Banks (2016, p. 470) suggest that “most librarians have taken, and passed, one, two, or three research methods courses throughout the course of their education.” However, this study shows that most programs offer only one course and do not have the capacity to offer additional research methods courses for their Master's-level students. Suggestions for lack of capacity included small faculty size, large course

catalog size, and lack of student interest. Regardless of why, many students enrolled in ALA-accredited LIS programs in the United States are likely to only take one research methods course as part of their program. Responses from many faculty in this study suggest that one course is sufficient for introducing the basic concepts of research, but not for preparing librarians to be researchers in their own right, echoing Berg and Banks.

This study demonstrates 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. Growing practitioners' capacity for research and preparing students for new professional roles in assessment, UX, or RDM requires changing curricular models and updating the documents that guide curriculum design, such as the *ALA Core Competences of Librarianship* (2009). The increasingly specialized library field also needs a diversified curriculum. While smaller LIS programs may not be able to expand their curriculum and offer more than one research methods class, larger programs could adopt a diversified approach, as discussed by Luo (2017). Offering a wider selection of specialized research methods courses allows programs to align students' training with their backgrounds and make it more relevant to their career pathways. Even when expanding the curricular areas is not an option, the one required course can be designed in a way that is relevant to practice and engages students in research.

The challenge of teaching research methods with reluctant students is discussed in the literature (Alemagne & Mandel, 2018; Mandel, 2017), but in this study it emerges as a major theme. The ability to change students' perception of research methods is a concern for many course instructors. The fact that students often enter their research methods courses without a background in research and with some fear was repeated throughout interviews. Some faculty thought that it was their job to change students' minds about the importance of learning research methods and felt they were successful in their efforts. This supports the findings from previous research (Alemagne & Mandel, 2018; Luo, 2011), where former students who took the research methods course expressed greater appreciation of the value of research and understanding of the importance of research methods. Incorporating practical research experience in the course design also contributes to students' positive views of the course and helps them see the relevance and importance of research to their professional paths.

Conclusion

Training in research methodology is an essential component of educating twenty-first-century information professionals and library practitioners.

LIS education responded to the changing information technology environment by redesigning curriculum and introducing technology-oriented classes. The new data-driven environment requires a similar response and a broader discussion of the place of research methods in the LIS curriculum if we want to prepare library professionals to be not only consumers of research but also active contributors to research, as well as to be competent UX experts, program evaluators, and data managers. This article contributes the findings of a study that examined the current state of research methods training in LIS Master's-level education in the United States.

The study finds that research methods courses are part of the core LIS curriculum but tend to focus on preparing students to understand and evaluate research rather than to engage in conducting basic research or evaluation studies. Training in research methodology is inconsistent across LIS programs and inadequate for preparing researcher-practitioners. The findings of the study may help LIS educators to develop a better understanding of the current models in teaching research methods and encourage them to consider alternative approaches in their own research methods curriculum. This study focuses on US Master's-level LIS education, which is unique in an international context as it does not require a prior LIS or research background. The researchers plan to expand the investigation and compare the findings from this study to curricular models in other countries.

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Appendix A. Teaching Research Methods in LIS: Study Screener and Pre-Questionnaire

Thank you for your interest in participating in this study. The goal of the study is to determine what approaches to teaching research methods are currently being applied in US Library & Information Science (LIS) programs. This pre-questionnaire is designed to collect general information about participants prior to participation in an interview. The information collected includes general information about the research methods course(s) you teach, and a few demographic questions that will be used for classification purposes only.

This research is only for U.S. residents over the age of 18. Please be mindful to respond in a private setting and through a secured Internet connection for your privacy. Your confidentiality will be maintained to the degree permitted by the technology used. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties.

Q1 Name*

Q2 Have you taught a master’s or PhD/master’s combined research methods course for a US LIS program in the past 3 years?

- Yes
- No

Q3 Are courses in your program taught on the semester or quarter system?

- Semester
- Quarter

Q4 Which research methods courses have you taught? (please list course title(s), number of credit hours, method(s) of instruction, and teaching materials used*).

	Method of Instruction (select all that apply)				Teaching Materials Used (select all that apply)		
	Credit Hours	Online	Onsite	Hybrid	Textbook (Purchased)	Textbook (Free – OER)	Selected Readings (Articles, Book Chapters)
Course Title #1							
Course Title #2							
Course Title #3							

Q5 For the <ChoiceTextEntry> course, what would you describe as the purpose of the course? (Select all that apply)

- Offer a survey of research methods (general – overview and introduction with no practice or application).
- Offer an opportunity to apply specific research methods (course includes practical application).

- Other: I would describe the purpose of the course as: _____

Q6 Which of the following would you identify as student outcomes for the <choiceTextEntry> course? (Select all that apply)

- Understand different types of research.
- Evaluate different types of research.
- Assist other researchers in conducting research.
- Design a research project.
- Execute/conduct a research project.
- Assist with research data management.

Q7 You indicated that you use a purchased textbook for <ChoiceTextEntry> course. Which textbook do you use?

Q8 You indicated that you use a free textbook (OER) for the <ChoiceTextEntry> course. Which free textbook do you use?

Q9 Does your program offer a PhD?

- Yes
- No

Q10 Does your program offer additional research methods courses for the PhD program?

- Yes
- No

Q11 Do you teach your class(es) in any language other than English?

- No
- Yes (please indicate which language(s))

These final questions are for classification purposes only.

Q12 Which categories best describe your race/ethnicity? (Please select all that apply)

- American Indian or Alaska Native
- Asian
- Black or African American

- Hispanic, Latino, or Spanish Origin
- Middle Eastern or North African
- Native Hawaiian or Other Pacific Islander
- White
- Another race, ethnicity, or origin not listed here: _____
- I prefer not to identify

Q13 What is your gender identity?

- Female
- Male
- Non-binary
- Prefer to identify as _____
- I prefer not to identify

Q14 Do you identify primarily as:

- Bisexual
- Gay
- Straight/Heterosexual
- Lesbian
- Queer
- Prefer to identify as _____
- I prefer not to identify

Thank you for completing this questionnaire. Upon submission, your answers will be recorded. The researchers will be in contact with additional information about the study and to schedule an interview. If you have any questions, please contact either AUTHOR 1 or AUTHOR 2 directly.

We appreciate your time and look forward to speaking with you further. Please click the next arrow to submit the questionnaire.

Appendix B. Teaching Research Methods in LIS: Interview Guide

1. *Instructor's Background*

Could you tell us a little about your professional background? What are your research and teaching interests? What other classes do you teach? What prompted /motivated you to teach the research methods class? How often do you teach? How long have you been teaching it?

2. *Course Basic Info*

Could you give us a little bit of background about the research methods class in your program?

- How long has this class been offered? Is it required for Master's students?
- Did you develop the course? If not, what modifications have you introduced?
- What are the course learning objectives? What skills and competencies is the course intended to teach?

3. *Course design*

- What is the scope and content of the course?
- What research designs, data collection techniques, and analytical approaches are introduced in the courses?
- What content would you like to introduce that is not covered in the course?
- What software is introduced in the course? Do students gain practical experience working with the software?
- What type of assignments do students need to complete? Do they need to design a research project / Do they write a research proposal?

4. *Outcomes*

- From your perspective, what skills and competencies do students gain after completing the course? Do they gain the skills you are hoping then to learn?
- Do you feel that the course prepares students to understand and analyze research conducted by others?
- Do you feel that the course prepares students to assist other research in conducting research or helping with research data management?
- What type of skills in designing and conducting research do students gain?

5. *Students*

- How many students typically enroll in the course? What are students' perceptions and attitudes before they take the class? What are their experiences in class?

6. *Program /department context*

- How does the program/department's leadership view the course? What other research methods courses are offered in the program? Does your program offer a PhD? What courses are available

outside of the LIS program? Are students interested in taking those classes?

7. *Final thoughts*

- What are your thoughts about teaching research methods courses in LIS? Where does the knowledge of research methods and skills in conducting research fit into LIS professional competencies? If you could redesign curriculum, what classes would you introduce?