

A Case Study of Periodical Use by Library and Information Science Students

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There is a lack of information in the literature about the sources used for research by modern Master of Library and Information Science students in the United States, and so the objective of this project is to understand the use of periodical articles by these students. Specifically: do articles play a major role in student research, how current are the articles cited, and can a core group of periodicals be identified? 192 capstone papers from 2005–2010 at the University of North Carolina at Chapel Hill were sampled for a bibliographic analysis. The results show that periodical articles do play a significant role (making up 48% of all references) and are fairly current (49% of all article citations were from within five years). This study identified four core LIS periodicals among its results: *The Journal of Academic Librarianship*, *College & Research Libraries*, *Library Journal*, and *Communications of the ACM*. Finally, 85% of all periodicals were cited by only one student, indicating that MLIS students use a broad variety of periodicals for their research.

Keywords: bibliometrics, use studies, periodicals, serial publications, theses, library schools

Introduction

Master's degree students in LIS programs have access to a wide variety of resources through their campus libraries. The goal of this study is to better understand what resources students use out of that abundance.

This study is significant because the researcher has found no bibliographic analyses conducted of LIS students from the United States since 2000. Only two of the four existing American studies (all pre-2000) specifically studied master's degree students. A comparison of recent study results demonstrates that there is a difference in source-use among students in the different countries, and therefore it may not be possible to apply the findings of those studies to U.S. students (Chikate & Patil, 2008; Clarke & Oppenheim, 2006; Keat & Kiran, 2008; Oppenheim & Smith, 2001; Tedd, 2006; Tonta & Al, 2006; Saberi & Nikkhah, 2009).

The purpose of this study is to under-

stand the use of periodical articles in research conducted by master's students in Information Science (MSIS) and Library Science (MSLS) programs, which will be referred to jointly as "MLIS" students. Specifically, this study will determine whether periodical articles play a major role in MLIS student research, define the currency of articles used in MLIS student research, and establish whether there is a core group of periodicals used in MLIS student research.

About SILS Students and Master's Papers

The documents examined are the master's papers from the School of Information and Library Science in the University of North Carolina at Chapel Hill (SILS). There are few online classes taught at SILS, and the majority of master's students take classes full-time and in-person. The "master's papers" are capstone projects, usually completed during the student's final semester. Satisfactory completion of

the paper is a graduation requirement for both an Information (MSIS) and Library (MSLS) Science master's degree. For purposes of this study, SILS provided unique access to an entire MLIS student population because all students are required to complete capstone papers.

Existing Literature

The author was able to identify 13 bibliographic analyses of LIS student work from 1976 and 2008, but the nine studies conducted since 2000 were all from LIS schools outside the United States. These countries are India (Chikate & Patil, 2008), Malaysia (Keat & Kiran, 2008), Turkey (Tonta & Al, 2006), Iran (Sabeti & Nikkhah, 2009; Riahinia, 2010), and the U.K. (Clarke & Oppenheim, 2006; Oppenheim & Smith, 2001; Tedd, 2006).

Existing Studies From the United States

Out of the four early studies conducted in the United States, only two examined master's (rather than doctoral) students. In 1976, LaBorie and Halperin conducted a bibliographic analysis of doctoral LIS student work at Drexel University, but due to its age, this article has limited modern applicability. In 1991, Hoy and Hale studied MLIS student work at Emporia State University to determine sources used by on-campus versus off-campus MLIS students and as a result is limited in scope and applicability. Glynn (1995) conducted a MLIS student bibliographic analysis for her dissertation at Central Missouri State University, and her detailed methodology was very helpful in the design of this research project. Most recently, Buttlar (1999) conducted a bibliographic analysis of doctoral LIS students.

Role of Periodical Articles in MLIS Student Research

Prior to 2001, books were consistently cited more often than periodicals in LIS

student research (Buttlar, 1999, pp. 235–6; Glynn, 1995, p. 19; LaBorie & Halperin, 1976; Oppenheim & Smith, 2001, p. 303). The trend of books being cited more frequently than articles continued into the 21st century in the United Kingdom, where Clarke and Oppenheim noted that only 35% of references were to articles (2006, pp. 11, 19), and Tedd found that periodicals made up 30% of the references (2006, p. 5). Meanwhile in Iran, Sabeti and Nikkhah also found that books were the most commonly cited source (Sabeti & Nikkhah, 2009, abstract).

Only three of the identified studies show articles being cited more often than books. In Turkey, Tonta and Al (2006) found that 52% of MLIS student references were to articles. In 2008, Keat and Kiran of Malaysia and Chikate and Patil of India found that just under half of the LIS student references were to articles (Keat & Kiran, p. 5; Chikate & Patil, Table 1). Riahinia's Iranian study found that articles were cited more often than books (2010, p. 51). Riahinia's study examined Iranian MLIS students while Sabeti and Nikkhah (2009) studied Iranian doctoral students; the difference in the sample populations may explain why these two contemporary and geographically similar studies each found different results.

Currency of Articles Used in MLIS Student Research

In a large cross-disciplinary student bibliographic analysis, Kushkowsky, Parsons and Wiese found that the median age of all citations was eight years (2003, p. 10), indicating that more recent articles are the most heavily used. LIS-specific bibliographic analyses in the U.K. have supported Kushkowsky et al.'s finding: in 2001 Oppenheim and Smith found that 62% of all LIS student citations were ≤ 5 years (p. 7). Five years later, Clarke and Oppenheim found that 56% of article citations were ≤ 4 years old (2006, p. 11).

Core Periodicals Used in MLIS Student Research

Except for Hoy and Hale (1991), who did not collect this data, all of the bibliographic analyses of LIS student work have found a core group of periodicals that provide the majority of periodical references. Additionally, many of the existing studies found that the majority of periodicals were cited rarely (Buttler, 1999, p. 236; Glynn, 1995, p. abstract; Goldstein, 1977, p. 1; Keat & Kiran, 2008, p. 10; Oppenheim & Smith, 2001, p. 7; Tedd, 2006, p. 7; Tonta & Al, 2006, pp. 7–8).

Among the US LIS student bibliographic analyses (all pre-2000), the most commonly referenced periodical is *Library Journal* (Glynn, 1995, p. 31; Goldstein, 1977, p. 1). The only exception is Buttler's study of doctoral students; she found that *College & Research Libraries* and the *Journal of the American Society for Information Science* were tied as the most commonly cited periodicals at 2.99% each, while *Library Trends* was a close second at 2.74% (Buttler, 1999, p. 236). In Turkey, the top five most commonly referenced periodicals among LIS students were the *Journal of Turkish Librarianship*, *Resmi Gazete*, *College & Research Libraries*, *Library Trends*, and *Library Journal* (Tonta & Al, 2006, p. 9). In the United Kingdom, Tedd found that the top four referenced periodicals among LIS students were the *Library and Information Update*, *Library Management*, *Library Trends*, and *Library Review* (Tedd, 2006, p. 7). In Iran, the most commonly cited English periodical was *College and Research Libraries*, though the Farsi-language periodical *Information Studies* received almost twice as many citations (Saberri & Nikkhah, 2009). In India, the most cited periodicals were *College and Research Libraries*, *Scientometrics*, and the *Journal of the American Society for Information Science* (Chikate & Patil, 2008, Table 2).

Methodology

Bibliographic Analysis

This study uses a bibliographic analysis to study and identify sources cited in a set of document bibliographies. The researcher considered other methodologies such as surveys, interviews, and observation of student research. However, these other data collection techniques introduced new threats to validity such as incomplete recall of sources used and the desire to provide correct answers to the researcher (Creswell, 2009, pp. 179-180). The non-intrusive method of bibliographic analysis provides well-thought-out student data free from influence by the researcher. Therefore, bibliographic analysis is the methodology that poses the least risk to validity.

Data Source

Many of the analyses discussed in the literature review used capstone projects (such as theses or dissertations) because of the advantages over other written assignments. The first advantage is consistency across a larger population, since the research is not limited to the small sample size of a single academic course nor has to contend with differing writing requirements across various courses. The other advantage is that as the final application of a student's accumulated training, the capstone paper will have the MLIS student's most developed bibliography. Therefore, this study also chose to analyze LIS capstone papers.

Sample

Sample frame. All of the LIS student bibliographic analyses discussed in the literature review used research papers available at the students' own institutions, and this researcher similarly chose to study at her own institution: the School of Information and Library Science

(SILS) of UNC-Chapel Hill. Five years is the most common time period among the bibliographic analyses in the literature review (Clarke & Oppenheim, 2006; Keat & Kiran, 2008; Tedd, 2006), so the author chose a five-year sample frame from June 2005- May 2010. This frame included 557 papers.

Sampling method. This study used stratified sampling by year, a method used in several existing studies. For purposes of this study, a year is defined as an academic year between August and May. The researcher further stratified the samples into library science and information science authors. Three of the master’s papers collected were written by students with dual library/information master’s degrees, and these were included in both strata. An approximately 30% sample was created from each master’s paper strata for a total of 192 papers (Wildemuth, 2009, p. 121–3). Because of the size of the collection, systematic rather than random sampling was used. Using a random number generator to choose a number between one and five for each year sampled, the researcher began with that number and sampled every third paper after (Wildemuth, 2009, p. 118).

Study Procedures

Data collection. This study used the structured record review method of data collection (Creswell, 2008, p. 146). After being assigned an identifier, each sampled bibliography was analyzed, and the results were entered into Microsoft Access tables. The researcher only collected data from the paper’s formal bibliography or works cited list. Some papers also included appendixes

(such as “related work”), but citations in these appendixes were not analyzed.

The scope of this research included articles from popular, scholarly, print, and electronic periodicals. Articles from electronic periodicals and edited blogs were included, but items published on personal blogs (blogs hosted by the article’s author) were not. Table 1 presents the yearly number of items counted for this study.

Unclear or incorrect citations were handled as follows. Abbreviated journal names in references were expanded. Typos were corrected when the intended journal was completely clear, but otherwise the periodical name was recorded in its original state. When a citation did not include a date, the researcher attempted to date the article by the volume (Clarke & Oppenheim, 2006, p. 11; Glynn, 1995, p. 16).

Data analysis. Table 2 outlines the research questions and the measures by which the data were analyzed. The data analysis for this study was fairly straightforward and unambiguous because the content is manifest rather than latent. The collected bibliographies had between zero and 144 references each, but the width of the range was caused by only a few outlying papers. Because of these outliers, the median (rather than the average) was used to calculate all percentages presented in the results (Wildemuth, 2009).

In this study, “current” was defined as published within five years. In 1996, Mete and Deshmukh found that the half-life of LIS periodicals was eight years (a “half-life” being defined the median age of references to the periodical). However, the half-life and relevancy of periodical

Table 1. Number of Bibliographies Sampled, Individual References, and References to Periodicals.

	2005–6	2006–7	2007–8	2008–9	2009–10
Bibliographies	36	37	41	37	41
References	869	1,007	1,174	963	1,454
Periodical references	439	541	468	563	706

Table 2. Research Questions and Associated Measures.

Research Question	Do articles play a major role in MSIS or MSLIS student research?	How current are articles used in MLIS student research?	Can a core group of periodicals used in MLIS student research be identified?
Measure A	What percentage of references are articles?	What percentage of articles are 5 or fewer years old?	What periodicals are cited by the most papers?
Measure B	How many periodical sources do students use?	n/a	What periodicals receive the highest number of total citations?

articles may be shrinking, especially for articles using web content as sources. This is illustrated by a recent study of information science articles, which found a half-life of only five years for hyperlinks to remain active (Goh & Ng, 2007). Therefore, this study chose to define “current” as five years. In this study, the term “core” was defined as the most commonly cited journals, even though those results may not match Bradford’s Law and the statistical definition of “core.”

Results

Role

The first research question was “do articles play a major role in MLIS student research?” Table 3 displays the median number of different periodicals cited in each student bibliography, and the median percentage of references to articles in each bibliography.

Articles from periodicals made up 48% of the total collected citations, with an 11% variance over the five years studied. This is a larger percentage of articles than was found by any of the United States or United Kingdom studies discussed in the

literature review. The median number of different periodical titles used by each student is nine titles, indicating that students do use multiple periodical sources.

Currency

The next research question was “how current are articles used in MLIS student research?” Table 4 shows the median percentage of current articles. For this paper, current was defined as five or fewer years old at the time of reference.

A median of 49% of the collected periodical citations were current. This is a lesser percentage than was found in the two recent LIS student bibliography analysis from the United Kingdom (Oppenheim & Smith, 2001; Clarke & Oppenheim, 2006). Therefore, periodical articles used in LIS student research do likely have a half-life of longer than five years.

In this study, the last year studied showed the lowest percentage of current articles used. A topical analysis could reveal whether this is based on an increased popularity in historical subjects, while a study of the 2010–11 master’s papers could tell us whether reduced usage of current articles is a continuing trend.

Table 3. Median Number of Periodical Titles Used and Percentage of References that are Periodical Articles.

	2005–6	2006–7	2007–8	2008–9	2009–10
Median number of periodical titles	8	11	8	10	9
Percentage of references that are periodical articles	46.1%	52.78%	40.4%	56.8%	47.5%

Table 4. Percentage of Cited Articles that are Current (published within 5 years).

2005-6	2006-7	2007-8	2008-9	2009-10
48.78%	47.46%	72.73%	61.11%	39.58%

Table 5. Periodicals Used by Only One Author: % of Cited Periodical Titles.

2005-6	2006-7	2007-8	2008-9	2009-10
80%	87.8%	85.2%	85.5%	84.1%

Core Journals

The final research question was “can a core group of periodicals used in MLIS student research be identified?” This study has identified four core LIS periodicals among its results: *The Journal of Academic Librarianship*, *College & Research Libraries*, *Library Journal*, and *Communi-*

cations of the ACM. These four periodicals not only claimed a large percentage of total references, but they were also used by a large number of individual authors.

Though these four periodicals were identified as the most commonly used, 85% of all periodicals were cited by only one student (Table 5). This makes it difficult to establish a longer list of core periodicals.

Table 6. Library Science. Periodicals with the Most Individual Citations, Starting with the Most Cited: % of References.

2005-6	2006-7	2007-8	2008-9	2009-10	Cumulative
Library Journal (6.09%)	Journal of Academic Librarianship, The (11.37%)	APLIS (7.39%)	Journal of Academic Librarianship, The (4.07%)	American Archivist, The (3.78%)	Journal of Academic Librarianship, The (22.16%)
American Libraries (4.06%)	Library Journal (6.4%)	Library Journal (3.46%)	College & Research Libraries (3.31%)	Journal of Academic Librarianship, The	Library Journal (3.95%)
College & Research Libraries (3.77%)	College & Research Libraries (4.03%)	College and Research Libraries Public Libraries (tie - 2.31 %)	Reference Services Review (3.05%)	Journal of Academic Librarianship, The College & Research Libraries (tie - 3.24%)	Library Journal (15.95%)
Journal of Academic Librarianship, The (3.48%)	Art Digest (3.32%)	American Libraries Library Resources & Technical Services Library Quarterly (tie - 2.08%)	School Library Journal Journal of the Medical Library Association (tie - 2.8%)	Science & Technology Libraries (2.70%)	APLIS (7.39%)
Library Trends Journal of Internet Cataloging School Library Journal (tie - 2.32%)	Art Libraries Journal (2.661 %)			Library Trends (2.34%)	American Libraries (6.14%)

Table 7. Information Science. Periodicals with the Most Individual Citations, Starting with the Most Cited: % of References.

2005-6	2006-7	2007-8	2008-9	2009-10	Cumulative
Communications of the ACM (5.75%)	Communications of the ACM (2.90%)	Communications of the ACM (8.75%)	New York Times, The (5.48%)	Journal of Nursing Administration (14.07%)	Communications of the ACM (17.4%)
Requirements Engineering (2.87%)	Library Trends Journal of the American Society for Information Science and Technology	Ariadne D-Lib Magazine (tie - 5%)	Journal of the American Medical Association (4.11%)	Computers in Nursing (3.52%)	
Journal of the American Society for Information Science and Technology (2.3%)	Chronicle of Higher Education Pediatrics		Pediatrics American Libraries (tie 3.42%)	Genetics in Medicine (3.02%)	
Applied Cognitive Psychology	Information Processing & Management	International Journal of Human-Computer Studies		New York Times, The Nursing Economics (tie - 2.51%)	International Journal of Human-Computer Studies (tie - 5.47%)
International Journal of Human-Computer Studies (tie - 1.72%)	SIGMIS Data Base (tie - 2.17%)	Interacting with Computers Games and Culture (tie - 3.75%)	Library Journal (2.74%)		Journal of the American Society for Information Science and Technology (4.47%)

Tables 6 and 7 outline the top ten most commonly cited periodicals by library science (LS) versus information science (IS) students. Tables 8 and 9 outline what periodicals were cited by the most papers regardless of how many times they were cited in each bibliography. When these two analyses are compared, there are many differences between the most commonly cited periodicals and periodicals used by the most individuals. This indicates that individual authors must cite multiple times from the same periodical, delving deeply into its content.

From 2005-2008, *Communications of the ACM* stands out as both the most commonly and often used periodical by IS

students. Further analysis and research is needed to determine why use of this journal has seemingly dropped off in the past two years and to explain other fluctuations among the most cited periodicals. One possible explanation might be shifting trends in paper topics.

The researcher also compared our most commonly cited periodicals with the results of the existing LIS student bibliographic analyses. This study's cumulative results do include all three of the most referenced periodicals that were identified by the existing United States LIS student bibliographic analyses: *Library Journal*, *College & Research Libraries*, and *Journal of the American Society for Information Science and*

Technology (Buttlar, 1999, p. 236; Glynn, 1995, p. 31; Goldstein, 1977, p. 1).

Two periodicals from this study’s cumulative results (*College & Research Libraries* and *Library Journal*) are found among the five most commonly referenced periodicals in Turkey (Tonta & Al, 2006, p. 9). Iran’s most commonly referenced English periodical was *College and Research Libraries*, which appears in this study’s cumulative results (Saberri & Nikkhal, 2009). Two of the three most referenced periodicals from India are found in this study’s cumulative results: *College and Research Libraries* and the *Journal of the American Society for Information Science and Technology* (Chikate & Patil,

2008, Table 2). Out of the four most commonly referenced periodicals identified by Tedd in the U.K., not one was found in this study’s cumulative results (Tedd, 2006, p. 7). These comparisons tell us that there are core periodicals essential to LIS research around the world (such as *College and Research Libraries*), but that regional differences prevent the results of a single study from being applicable to other schools.

Conclusions

This study found that periodical articles play a significant role in MLIS student research at UNC-Chapel Hill, with a median of 48% periodical sources. This

Table 8. Library Science. Periodicals Cited in the Most Bibliographies, Starting with the Most Cited: % of Bibliographies.

2005–6	2006–7	2007–8	2008–9	2009–10	Cumulative
Library Journal (3.48%)	College & Research Libraries (3.57%)	Library Journal (2.69%)	College & Research Libraries Journal of Academic Librarianship, The (tie - 3.02%)	Journal of Academic Librarianship, The (3.06%)	College & Research Libraries (14.54%)
College & Research Libraries Journal of Academic Librarianship, The (tie - 3.04%)	Journal of Academic Librarianship, The Library Journal (tie - 2.38%)	College & Research Libraries (2.36%) American Libraries Journal of Academic Librarianship, The Portal: Libraries and the Academy Public Libraries Public Library Quarterly (tie - 1.68%)	School Library Journal Journal of the American Society for Information Science and Technology (tie - 1.68%) (9 periodicals tied at 1.34% each)	College & Research Libraries (2.55%) Library Quarterly Library and Information Science Research (tie - 1.79%) School Library Journal (1.53%)	Journal of Academic Librarianship, The (13.18%) Library Journal (8.55%) American Libraries (5.83%) Public Libraries (3.27%)
American Libraries Reference Librarian, The (tie - 2.17%)	American Libraries (1.98%) Library Review North Carolina Libraries Public Libraries Science and Technology Libraries (tie - 1.59%)				

Table 9. Information Science. Periodicals Cited in the Most Bibliographies, Starting with the Most Cited: % of Bibliographies.

2005-6	2006-7	2007-8	2008-9	2009-10	Cumulative
Communications of the ACM (5.63%)	Communications of the ACM (3.6%)	Communications of the ACM (5%)	Journal of the American Society for Information Science and Technology (2.8%)	Journal of the American Society for Information Science and Technology (2.13%)	Communications of the ACM (5.75%)
Journal of the American Society for Information Science and Technology (4.23%)	Information Resources Management Journal Journal of Adolescent Health	International Journal of Human-Computer Studies Interacting with Computers (tie - 3.33%)	New York Times, The Journal of the American Medical Association Communications of the ACM Computers & Education Journal of the American Medical Information Association Medical Care (tie - 1.85%)	(12 periodicals tied at 1.42% each)	Journal of the American Society for Information Science and Technology (10.98%)
(9 periodicals tied at 2.82% each)	Journal of the American Society for Information Science and Technology MIS Quarterly (tie - 1.82%)	(50 periodicals tied at 1.67% each)			International Journal of Human-Computer Studies (3.33%) Interacting with Computers (3.33%) (5 periodicals tied at 1.85% each)

study also found that 49% of periodicals cited by MLIS students were fairly current and published within five years. This suggests that the half-life of articles used for MLIS student research is longer than five years, and that MLIS student research would therefore benefit from access to back issues of periodicals rather than just current issues. This study has identified a list of most commonly cited periodicals for MLIS students at UNC-Chapel Hill, and certainly that particular institution can consider these periodicals valuable and prioritize their retention. Libraries at other institutions can use this study's results to demonstrate that these periodicals at least have a high potential to be valuable to their MLIS students.

The results of this study also indicate that SILS master's students utilize periodicals from a wide variety of topics in order to perform diverse and unique capstone research. Often, SILS students will perform deep research into a particular periodical, which is not utilized by any other student. To encourage such diversity in their student research, LIS schools, librarians, and faculty should consider if their students are sufficiently aware of applicable research and periodicals outside the LIS field. The institution's library must also have and maintain access to these diverse periodicals in order for MLIS students to use them. This is particularly relevant in a time of shrinking academic library budgets, when subject librarians and de-

partments must defend and advocate for continued access to resources. It may be important for LIS librarians, faculty, and departments to advocate on behalf of non-LIS subscriptions.

This study also has implications for emerging LIS researchers. Since a broad variety of periodicals were used in this student research, database access is a potential challenge for LIS scholars after graduation. Graduates employed by academic institutions will continue to have access to many subscription databases, but graduates employed by schools and public libraries will likely have trouble accessing a sufficiently broad collection of periodicals to support their future research.

Limitations of the Study

Due to the possibility of inaccurate bibliographies, the results of this study should be used only in conjunction with results from other methodologies such as relevance analyses, professional citation analyses, impact factors, or patron surveys (Boyce, Kraft, & Meadow, 1994). Furthermore, with a sample frame of a single institution the results of this study cannot necessarily be applied at other locations. However, the results of this study can be used to understand the results of any similar studies conducted at other MLIS-granting institutions.

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