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Humanities and Social Sciences Dissertation Bibliographies and Collections: The View from a STEM University

Trevor Burrows, Robert S. Freeman, Erla P. Heyns, and Jean-Pierre V. M. Hérubel

abstract: This study utilized dissertation bibliographies produced at Purdue University in West Lafayette, Indiana, a STEM-oriented university, to ascertain how well Purdue's Humanities, Social Science, and Education (HSSE) Library supports doctoral research. To examine a critical mass of data, the authors gathered all the bibliographies of dissertations written in 11 disciplines within the College of Liberal Arts in 2011 and 2015. Data for each citation included year of publication, language, format type, and local availability in print or digitally. Revealing disciplinary trends in using sources, this study provided critical information for reconceptualizing the HSSE Library's orientation to learning and research and for engaging with faculty to understand where to strengthen the library's collections.

Introduction

Doctoral dissertations represent the capstone research efforts for the attainment of the doctoral degree. Generally, they adhere to the protocols and standards expected for the highest training of disciplinary scholars, culminating in a book-length, highly honed, and specialized contribution to knowledge in a field. Graduate departments generally privilege doctoral research and training, and view support for student learning and for building research skills as paramount. For this reason, analysis of dissertations constitutes a useful approach to evaluating library collections and how well they support doctoral research.¹

This exploratory study aimed to assess the research support provided by library collections for doctoral research, resulting in dissertations as a capstone experience. This investigation provided the foundational template and process for the closer examination of collections support for doctoral programs in the College of Liberal Arts at Purdue University in West Lafayette, Indiana. The authors focused specifically on doctoral theses originating from the programs in American Studies, Anthropology, Communication, Comparative Literature, English, History, Languages and Cultures, Linguistics, Philosophy, Political Science, and Sociology.

The STEM Setting

The Humanities, Social Sciences, and Education (HSSE) Library is part of the Purdue University Libraries and supports the teaching and research activities of the College of Liberal Arts (CLA) and the College of Education. Purdue University is a land-grant university vested in STEM (science, technology, engineering, and mathematics) instruction, applied research, and doctoral programming. Purdue is a highly ranked STEM institution but less known for the humanities and social science disciplines.² The CLA, however, began a significant transformation in 2015, when a new dean of the college embarked on a focused effort to bring more attention to CLA programs and to confirm and heighten the importance of a liberal arts education in this predominantly STEM-centered setting. This effort resulted in the introduction of new programs to enhance undergraduate education, make graduate education more attractive and visible, support faculty effectiveness, and grow income streams.³

The HSSE Library is a key player in efforts to reshape the liberal arts at Purdue. Libraries are critical stakeholders in the education of students as partners in both student and faculty research. However, many faculty in the CLA perceived library collections in the humanities and social sciences at Purdue as less than adequate. As an identified problem, Purdue Libraries

needed to fully understand this perception and work with the CLA to correct it. When faculty mention the lack of adequate collections, they compare Purdue Libraries with libraries at universities with strong humanities and social science programs, such as Indiana University. With Purdue's initiatives in the humanities and social sciences and the intention of the university administration to build strong programs and attract more students in these disciplines, there is a strong impetus for the Purdue Libraries to have empirical data to understand how well their collections serve all constituents. This information will facilitate new discussions about the strengths of the library and provide the foundation for plans to enhance its collections and programs.

To better understand the history and context of libraries in land-grant settings, the authors turned to a study by Donald Davis and J. Mark Tucker,⁴ who examined 13 land-grant libraries, including Purdue University Libraries. Davis and Tucker provided a short history of each library and compared them with one another. The Morrill Act of 1862, which established land-grant universities, focused on agriculture and mechanical education. Initially, the land-grant universities did not favor research, which made it difficult to justify libraries. Even after that sentiment shifted, research in agriculture and mechanical disciplines still prevailed. Some of the institutions covered in the study chose not to include the liberal arts in their curriculum offerings, or their efforts to include liberal arts were denied at the university level. Although Purdue's early curriculum included some humanities and social science courses, these areas did not have their own departments, grant diplomas, or administer graduate education and research until the early 1960s.⁵ Interestingly, the Morrill Act did not require the exclusion of liberal arts, and universities could determine their own curriculums.

Another important factor that impacts academic libraries is that, in most states, the land-grant university competes for state funding with the large public university.⁶ Jessie Smith pointed out that the large public university libraries had much greater collections growth than did the libraries at land-grant institutions. This disparity held true for many states, including Indiana, where the two largest universities are Indiana University in Bloomington and Purdue University:

A comparison of the rate of increase in total volumes versus time at Indiana and Purdue showed that growth was slow at Indiana up to 1900, and at Purdue up to 1920. Indiana University had acquired at least twice as many volumes at the end of each of the ten-year intervals (1870–1960) as Purdue had at the same intervals.⁷

In 1950, Indiana University had approximately 800,000 volumes, and Purdue had 300,000. By 1960, Indiana University's collection stood at 1,300,000, while Purdue had only 500,000 volumes. This trend has held true for state universities and land-grant universities overall. The significance of this disparity between the collection growth at the two universities is further complicated by the fact that Purdue focused on engineering and science, while Indiana University concentrated on the humanities and social sciences.⁸

An important element in the ongoing success of the HSSE Library at Purdue is its regular efforts to examine the question of accountability regarding collections. The librarians needed an accurate picture of the state of the CLA at Purdue University and an understanding of the role of the humanities and social sciences at this land-grant institution. They needed to know if their collections and service models met the needs of the faculty and students in the humanities and social sciences and, if not, they needed to understand why. It was critical for them to reconceptualize collection development practices and to make sure the library's holdings met the research and pedagogical needs of the departments in the CLA.

To engage CLA faculty with information about HSSE Library collections that is empirical and conceptual, this study used a citation analysis of doctoral dissertations to measure how well the collections support the humanities and social sciences. A rich literature points to the effectiveness of using bibliographies to analyze doctoral theses.⁹ A literature review found six relevant citation analyses in various disciplines.

University of Notre Dame Libraries in Notre Dame, Indiana, did a study in 2012 to determine how well they served graduate students. The study was designed to find out what graduate students in all disciplines cited and whether the libraries owned those items. The investigation found that most of the cited items were books and journals and that the libraries owned 67 percent of the cited material. When looking at the disciplinary breakdown, the highest correlation between items cited and what the library owned was in engineering (90 percent) and science (92 percent). The correlation was lower in the humanities (83 percent) and lowest in social science (75 percent).¹⁰

Melissa Gasparotto analyzed citations in the Department of Spanish and Portuguese at Rutgers University in New Jersey.¹¹ Her study focused on what type of material was cited and revealed that monographs were still heavily referenced in both the humanities and social sciences. Another important finding was that PhD students in these fields tended to favor open access journals, which could mean that they did not know how to navigate library resources behind paywalls, preventing their use without a paid subscription, or that the students chose those citations for other reasons. In any event, these findings helped librarians understand how to focus collection decisions when choosing between formats. Librarians can also refer to these results when discussing the development and navigation of library collections with faculty and graduate students.

Jennifer Knievel's study used citation analysis to reveal the resource needs of graduate students and faculty in philosophy at the University of Colorado Boulder and to measure how well the library collections met those needs.¹² An important contribution of this study is that it looked at how books were acquired, for example, through an approval plan or through firm orders. The study found that most books were purchased through approval plans, although the data for source of purchase were not collected prior to 1995. The study also looked at the bibliographies of books written by faculty in the Philosophy Department. The library owned 83 percent of the books cited by graduate students and 81 percent of the books referenced by faculty.

In a 2013 study, Jeffrey Knapp used citation analysis to reveal some ways in which doctoral research in political science had changed over time at Penn State University in State College.¹³ He examined two comparable groups of political science dissertations from different periods: group A consisted of 20 dissertations completed in 1953 to 1968, and group B consisted of 20 dissertations from 2005 to 2010. With a 37-year gap between the groups and a breakdown of the citations into more than 13 format categories, Knapp observed an increase over time in the percentage of journal article citations, consistent use of books, and a decline in the use of government documents, newspapers, and archival materials. These changes reflected a movement away from humanities to a more social science approach. By analyzing the Library of Congress call numbers assigned to the source journals and books, Knapp showed a trend away from works classed as history toward more works categorized in various social sciences and more works identified specifically as political science. Knapp also clearly stated the value of doing citation analyses: "If librarians want to forge relationships with faculty members outside

the library, and partner with them in their research, it is important to understand the knowledge landscape of that discipline.”¹⁴

Suzanne Schadl and Marina Todeschini studied dissertations covering Latin American studies in many departments in the humanities and social sciences, including a few science departments, at the University of New Mexico in Albuquerque.¹⁵ Schadl and Todeschini examined the languages and formats of the citations. They also sorted the doctoral theses into two data sets. One set included Spanish- and Portuguese-language books and articles across 17 academic departments, and the other focused on local holdings to determine to what extent the University of New Mexico could provide those works. The researchers found that the library held 73 percent of the books cited. Their disciplinary analysis interested the authors of the present study: “Several departments meet or exceed the average of the locally available 73 percent, with History at 90 percent, Anthropology at 76 percent, Art History at 74 percent, and Political Science at 73 percent. Sociology is not far behind at 71 percent locally available.”¹⁶

Manuel Ostos studied the holdings of Penn State University Libraries in Latin American studies compared to the monographic material that faculty in those disciplines used.¹⁷ The faculty represented several departments in liberal arts, communication, art and architecture, and earth sciences. The study found that, of 3,100 citations, 76 percent were books and only 24 percent were journal articles. Of the books, 58 percent were in English and 42 percent in other languages. The library owned 59 percent of the books: 44 percent of those in English and 11 percent of those in other languages. Only 9 percent were available online.

All these studies reinforce the idea that librarians can and should understand what graduate students and faculty use in their research. Understanding the strength of library collections in different disciplines allows for a meaningful dialogue with deans, department

chairs, faculty, and graduate students. Making informed decisions about collection acquisition is critical as budgets fail to grow or, in many cases, shrink.

Approach and Methodology

This study examined the bibliographies of 144 dissertations completed in two different years: 85 were done in 2011, and 59 were completed in 2015. The authors selected 2011 because at that time the HSSE Library had just started an e-book acquisition program, and they speculated that, by 2015, there might be a discernible impact from access to a large number of e-book titles. In total, the authors considered 24,418 individual citations from 144 dissertations.¹⁸ To analyze this large set of citation data at multiple levels—from that of a single doctoral thesis to that of a specific department to the body of dissertations as a whole—the research team manually entered each citation’s components into a single Excel worksheet. They then used that worksheet as the data-model for the creation of numerous pivot tables that summarized the statistics. Each citation had its own row with individual data points entered across the worksheet’s columns. These data points included title, publication date, volume number (for journals or periodicals), language, and format type. The team also included columns indicating whether a given item was available through Purdue Libraries and, if so, whether it was available in print or in electronic form, as well as columns to calculate the age of cited sources and to group them into 10-year spans.¹⁹ Finally, autocomplete and selective use of the “find” feature were used to ensure consistency of titles as the researchers entered citations into the spreadsheet. This made it easy to consider multiple citations to the same title regardless of how they were presented in each bibliography.

Each citation was coded as one of 14 formats, which were further grouped into one of two categories, “primary formats” and “other formats.” These larger sections were created primarily for analytical purposes, which facilitated the division of sources between those that

directly intersect with library services—that is, those the library may reasonably be expected to provide—and those that generally fall beyond the scope of its collections. “Primary formats” included book chapters, dissertations, journal articles, legal or government documents, monographs, newspapers and periodicals, and reference. “Other formats” included archival sources, audiovisual materials, online sources, unpublished papers and presentations, reports, unknown, and other or miscellaneous. These format types closely match those used by Jeffrey Knapp,²⁰ with a few exceptions. In the “primary formats” group, the authors separated journal articles from other periodicals such as magazines and newspapers, and coded reference items such as encyclopedia and dictionary entries separately from other format types. In the “other formats” group, the authors added audiovisual to better capture such items as music albums and movies, created a report category for documents and data published by nongovernmental institutions, and added “other” and “unknown” categories to better identify items that either did not clearly fit into one of these categories or whose format could not be determined due to language barriers.

Assigning format types to each citation inevitably runs into problems when sources could be classified in multiple ways, and this is especially true when categorizing citations of online sources or websites. For instance, if a dissertation cites an online magazine article that has no print counterpart, should the article be identified as an online source or as a newspaper or periodical? Because the authors were interested in applying this study to questions of library services and collection development, they chose to categorize most citations of unique online content as “online sources” regardless of the type of source itself. Content that likely had a print analogue or materials that required special access to retrieve, on the other hand, were classified by their actual type. An e-book, an electronically accessed journal article, or a citation to the *New*

York Times were all categorized by their format—monograph, journal article, and periodical, respectively—regardless of how each was accessed. A citation of the born-digital magazine *Aeon*, a YouTube video, or a British Broadcasting Corporation (BBC) web-based article, however, were deemed online sources. The one exception to this schema concerned open-access scholarly journals that are only available digitally. Because the library helps to facilitate access to these journals, we included them with all other scholarly journals in our analysis regardless of their material format. To work toward consistency, citations in the most complicated categories—the bulk of the “other formats” grouping, as well as the legal and government documents category—were reviewed again after all citations were processed and were updated as needed.

General Results

A few initial observations may be gleaned from an overview of the data. See Table 1.

Department	Number of Dissertations		Total citations	Average Citations per Dissertation
	2011	2015		
Humanities	51	39	15046	167.2
American Studies	7	2	1660	184.4
Comparative Literature	6	4	1401	140.1
English	19	19	5138	135.2
History	10	3	4299	330.7
Languages & Cultures	4	8	1323	110.3
Philosophy	5	3	1225	153.1
Social Sciences	34	20	9372	173.6
Anthropology	2	3	1392	278.4
Communication	18	8	4369	168.0
Linguistics	4	4	1328	166.0
Political Science	4	2	1164	194.0
Sociology	6	3	1119	124.3
All Departments	85	59	24418	169.6

Table 1. Overview of Dissertations Studied.

Department	# of Diss.	BC	(%)	Diss	(%)	JA	(%)	GD	(%)	Mono	(%)	NP	(%)	OF	(%)	Totals
Humanities	90	1768	12%	138	1%	3524	23%	117	1%	6920	46%	1002	7%	1579	10%	15048
American Studies	9	203	12%	13	1%	165	9%	53	3%	809	47%	296	18%	121	7%	1660
Comparative Lit	10	184	13%	10	1%	187	13%	0	0%	855	61%	39	3%	126	9%	1401
English	38	666	13%	31	1%	1686	33%	13	0%	2028	39%	188	4%	526	10%	5138
History	13	235	5%	60	1%	509	12%	49	1%	2304	54%	442	10%	702	16%	4301
Languages & Cultures	12	243	18%	23	2%	530	40%	1	0%	490	37%	5	0%	31	2%	1323
Philosophy	8	237	19%	1	0%	447	36%	1	0%	434	35%	32	3%	73	6%	1225
Social Sciences	54	1141	12%	94	1%	4742	51%	44	0%	2120	23%	203	2%	1028	11%	9372
Anthropology	5	199	14%	19	1%	508	36%	0	0%	455	33%	76	5%	135	10%	1392
Communication	26	523	12%	21	0%	2340	54%	12	0%	874	20%	62	1%	537	12%	4369
Linguistics	8	234	18%	51	4%	606	46%	0	0%	372	28%	1	0%	64	5%	1328
Political Science	6	111	10%	1	0%	513	44%	6	1%	257	22%	57	5%	219	19%	1164
Sociology	9	74	7%	2	0%	775	69%	26	2%	162	14%	7	1%	73	7%	1119
Totals	144	2909	12%	232	1%	8266	34%	161	1%	9040	37%	1205	5%	2607	11%	24420

Table 2. Citation Count by Primary Format for 2011 and 2015.

Legend for Format Types:

of Diss. = total number of dissertations for that discipline in data sample; BC = Book Chapters; Diss = Dissertations; JA = Journal Articles; GD = Legal and Government Documents; Mono = Monographs; NP = Newspapers and Periodicals; OF = Other Formats. Percentages for this and other tables are rounded and may not total 100%.

First, monographs, journal articles, periodicals, and book chapters continue to be the primary formats utilized by today's humanities and social science PhD students. Thirty-seven percent of citations referenced monographs, and 34 percent cited journal articles. Book chapters and periodicals each accounted for another 12 percent and 5 percent of citations, respectively. This means that roughly 88 percent of all citations referenced sources in one of these formats. Other types of sources, such as online or audiovisual sources, government documents, and unpublished material, accounted for only 12 percent of the whole. Of those remaining formats, only two constituted more than 1 percent of all citations: online sources (4 percent) and archival sources (3 percent). Even when these results were broken out by discipline, the primary drivers of scholarly research continued to be monographs, journal articles and periodicals, and book chapters (see Table 2).²¹

Furthermore, use of the less common types of sources were often dominated by a handful of dissertations or by a given department. Over 500 of the 623 citations referencing archival sources came from the History program, for instance, and just 3 dissertations accounted for 203 of the 306 audiovisual references. References to online sources, though more common and more evenly distributed across disciplines and individual projects, were still relatively rare. Although two-thirds of our sample cited an online source, only 27 dissertations referred to online sources more than 10 times. Although online sources were cited 1,052 times, 76 percent of those

citations came from only 19 percent of all doctoral theses studied. These and other less-used formats were cited by fewer dissertation authors and in lower quantities than their primary format counterparts, and spikes in usage were often driven by a single dissertation or discipline rather than a trend across graduate research.

Some general observations may also be made regarding the language and the age of sources cited. English-language sources far outnumbered non-English sources. Although 17 languages were represented in the bibliographies, 93 percent of all citations referenced English-language materials. Of 1,626 non-English sources cited, the six most common languages were French, Spanish, German, Chinese, Korean, and Latin, in order of frequency. Those six languages accounted for 86 percent of non-English citations. In many cases, a single doctoral thesis was responsible for all references to sources in a specific language; this was the case for citations of Dutch, Indonesian, Korean, Lithuanian, Macedonian, Portuguese, and Turkish sources. Not only did English sources overwhelmingly outnumber non-English ones, but also only a handful of non-English languages were cited with any regularity (see Table 3).

Language	Citations (#)	Citations (%)
Arabic	35	0.14%
Chinese	155	0.63%
Dutch	9	0.04%
English	22792	93.34%
French	439	1.80%
German	160	0.66%
Indonesian	14	0.06%
Italian	47	0.19%
Japanese	20	0.08%
Korean	139	0.57%
Latin	109	0.45%
Lithuanian	1	0.00%
Macedonian	5	0.02%
Other/Unknown	12	0.05%
Portuguese	14	0.06%
Russian	25	0.10%

Spanish	404	1.65%
Turkish	38	0.16%
Grand Total	24418	100.00%

Table 3. Citations by Language for 2011 and 2015.

Finally, considering the general age of sources used, an overwhelming number of citations—75 percent—referred to materials published after 1985. Another 17 percent appeared between 1955 and 1985. Only 8 percent of cited sources had publication dates before 1955. Although there were variations by format and department, this generally holds true with two notable exceptions: both history and American studies typically cited a larger number of older sources, and in some cases fewer recent sources, than other departments (see Table 4).

Department	- 1925	1926 - 1935	1936 - 1945	1946 - 1955	1956 - 1965	1966 - 1975	1976 - 1985	1986 - 1995	1996 - 2005	2005-	nd
Humanities	9%	1%	1%	1%	4%	6%	9%	16%	28%	24%	2%
American Studies	11%	2%	1%	1%	10%	7%	7%	16%	28%	17%	2%
Comparative Literature	9%	1%	1%	2%	4%	7%	6%	15%	30%	23%	1%
English	4%	0%	0%	1%	1%	3%	7%	16%	33%	33%	1%
History	20%	1%	2%	2%	4%	9%	10%	14%	20%	14%	4%
Languages & Cultures	1%	0%	1%	2%	5%	7%	13%	19%	28%	24%	0%
Philosophy	1%	0%	0%	0%	1%	5%	8%	16%	35%	32%	1%
Social Sciences	1%	0%	0%	1%	1%	3%	7%	16%	37%	33%	1%
Anthropology	4%	0%	0%	0%	1%	4%	6%	19%	38%	27%	1%
Communication	0%	0%	0%	0%	1%	3%	7%	14%	37%	36%	1%
Linguistics	0%	0%	0%	1%	2%	6%	13%	23%	30%	22%	1%
Political Science	0%	0%	1%	1%	1%	2%	4%	14%	44%	32%	2%
Sociology	0%	0%	0%	1%	2%	2%	6%	13%	37%	39%	1%
All Departments	6%	0%	1%	1%	3%	5%	8%	16%	32%	27%	2%

Table 4. Source Publication Dates as Percentage of Department Totals.

A typical dissertation in the humanities or social sciences, then, primarily cites English-language monographs, journals, book chapters, and periodicals published within the last few decades. However, the variations of citation patterns at the departmental level and at the level of the individual dissertation are substantial enough to influence how research libraries manage their collections to meet the needs of graduate students. In relation to the sources cited in our sample, Purdue Libraries generally met those needs well. When looking at the four most commonly cited formats, 79 percent of sources were available through Purdue's immediate collection. Journal article citations were the best serviced, with 93 percent of cited journal articles available through the libraries' collections. Monographs and book chapters were on hand at the rates of 73 percent and 71 percent, respectively. Newspapers and periodicals posed the most difficulty to the libraries, with just under half of all citations available at Purdue Libraries. As we will see, however, local availability statistics are greatly affected by the specific types of resources used by each department. In the case of newspapers and periodicals, for instance, the clear majority of citations came from history and American studies, where the periodicals tend to be both older and particular to a subject or region. A closer look at the patterns of each department will help us better understand how library services can meet the needs of humanities and social sciences graduate education today.

Formats: Humanities versus Social Sciences

In library science literature, it is generally understood that social sciences favor academic journals over monographs, and the humanities prefer monographs over academic journals. For our purposes, we categorized HSSE departmental dissertations into social sciences and

humanities. The numbers that follow highlight the distribution of journal articles and monographs by discipline, pertaining to HSSE.

Social Sciences

Anthropology dissertations were social science-oriented but reflected a ratio of 36 percent journal articles to 33 percent monographs, close to an even split between social science and humanities. Communication dissertations conformed to the social sciences norms, with 54 percent journal articles and 20 percent monographs. Doctoral theses in the Linguistics program also aligned with the social science norms, with 46 percent journal articles and 28 percent monographs. Political Science dissertations conformed to the social science norms with 44 percent journal articles and 22 percent monographs. The remaining 19 percent, in the “other format” category, included a wide spectrum of materials, while the 1 percent legal or government documents was surprisingly low. However, international relations studies and statistical approaches may account for this. Sociology dissertations adhered to the social sciences usage pattern with 69 percent journal articles and only 14 percent monographs. At 2 percent for legal or government documents, Sociology utilized more of this format than did political science.

Humanities

American Studies dissertations were more humanities-oriented and reflected a 47 percent monograph to 9 percent journal articles ratio, with a significant reliance of 22 percent on formats other than monographs and journals. Dissertations in the Comparative Literature program conformed to the humanities norms, with 61 percent monographs and 13 percent journal articles. Many sources were multilingual. English doctoral theses reflected a near parity of 33 percent journal articles and 39 percent monographs. This department produced many dissertations in the programs of English Language and Linguistics and of Rhetoric and Composition, where social

science norms of journal usage were greater than in literary studies. History dissertations conformed to the humanities model of 12 percent journal articles versus 54 percent monographs, but with a 10 percent usage of newspapers and magazines, generally popular magazines. At 15 percent, “other formats” constituted a mixed spectrum of materials, including visual materials. Dissertations in the Languages & Cultures program approached parity with 40 percent journal articles and 37 percent monographs. However, book chapters showed 18 percent usage, which reflected the program’s special focus on linguistics and second-language acquisition. Philosophy dissertations were near parity with 36 percent journal articles and 35 percent monographs. However, with 19 percent book chapters, they showed a more humanities-oriented usage pattern.

Most dissertations conformed to normative usage practice understood in social sciences and humanities disciplines, but there were some interesting deviations. The programs in Anthropology, English, and Languages & Cultures constituted outliers. At first, Philosophy appeared to favor social sciences norms until its reliance on book chapters became clear and confirmed its alignment to a humanities approach to research.

Journal Usage and Discipline-Based Dissertations

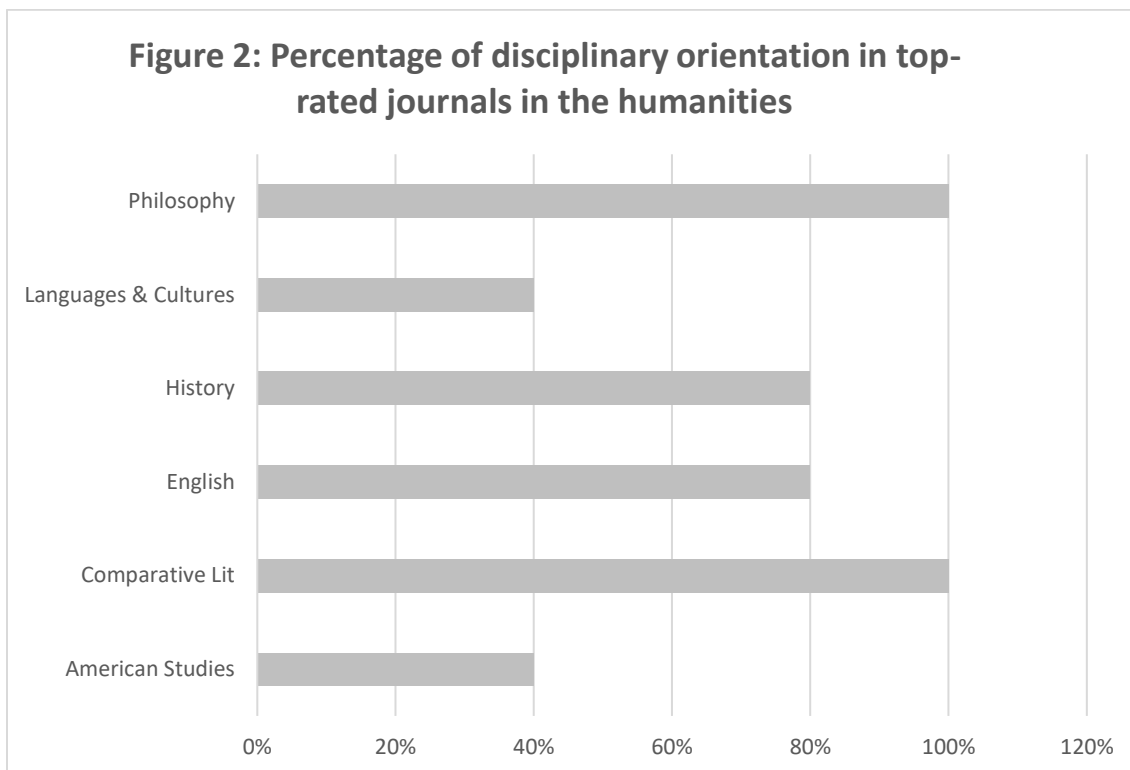
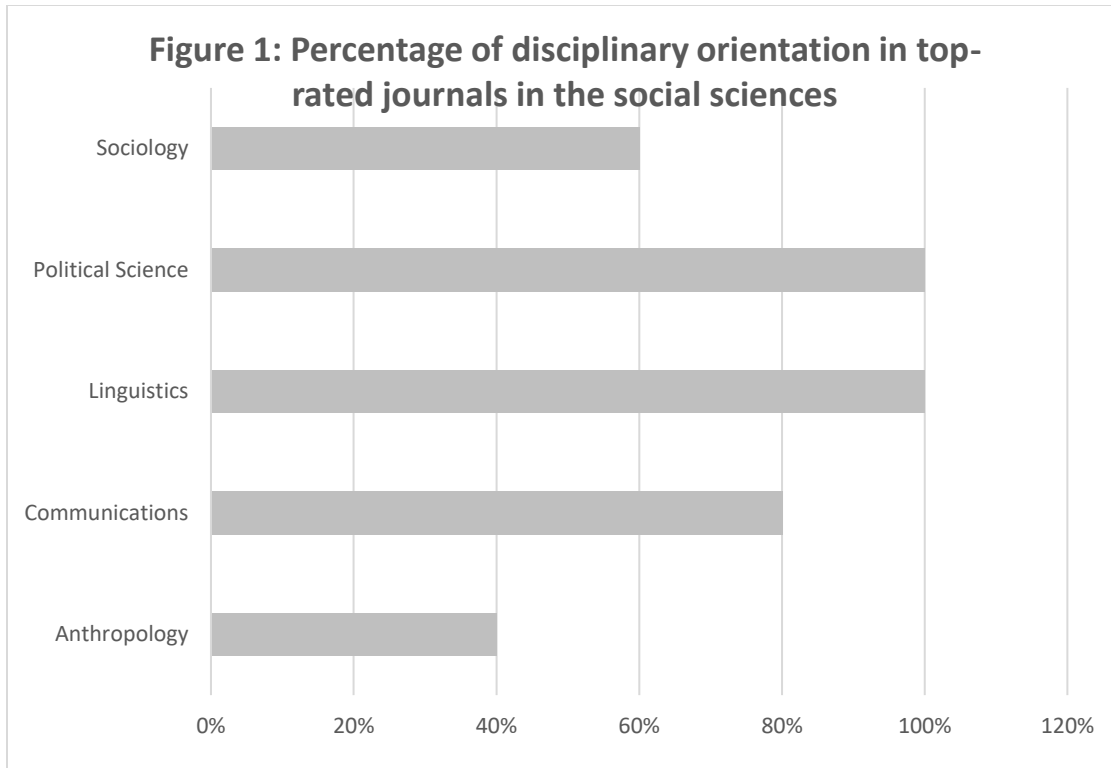
Use of journals by dissertation authors revealed an informative hierarchy of key titles per discipline. Identifying the 20 most cited journals per department, the authors found that the top five journal titles were key indicators of publications intellectually tied to the discipline. Additionally, the top five cited journal titles per discipline were salient indicators of dissertation subject focus as well as degree of disciplinary alignment (see Table 5).

Social Sciences	1st	2nd	3rd	4th	5th
Anthropology	Annual Review of Anthropology	Journal of Homosexuality	Journal for the Scientific Study of Religion	Conservation Biology	American Ethnologist
Communication	Management Communication Quarterly	Communication Monographs	Communication Theory	Journal of Applied Communication Research	Academy of Management Review

Linguistics	Journal of the Acoustical Society of America	Journal of Speech, Language, and Hearing Research	World Englishes	Babel	Cognition
Political Science	International Organization	American Political Science Review	American Journal of Political Science	International Studies Quarterly	Journal of Politics
Sociology	American Journal of Sociology	American Sociological Review	Social Networks	Journal of Personality and Social Psychology	Social Psychology Quarterly
Humanities					
American Studies	North American Review	Phylon	African American Review	PMLA	Art Journal
Comparative Lit	Eighteenth-Century Fiction	PMLA	ELH	Eighteenth-Century Studies	Novel: A Forum on Fiction
English	Journal of Second Language Writing	TESOL Quarterly	College Composition and Communication	World Englishes	Modern Language Journal
History	Historical Journal	Popular Music	American Historical Review	Journal of Social History	Annales Histoire, Sciences Sociales
Languages & Cultures	Modern Language Journal	Hispania	Language Learning	Applied Psycholinguistics	Journal of Second Language Writing
Philosophy	Phronesis	Oxford Studies in Ancient Philosophy	American Journal of Bioethics	Philosophical Studies	Philosophical Quarterly

Table 5. Five Most-Cited Journals per Discipline.

Using Library of Congress classifications, the authors examined each department's five top-cited journals for their degree of disciplinary orientation or of interdisciplinary or multidisciplinary inclusion. Figures 1 and 2 depict the configurations of disciplinary orientation or insularity found in these journals. Disciplinary inwardness, or intellectual insularity, has consequences for collections, and the findings here point to unique local phenomena. The degree to which collections must consider disciplinary cultures and their reliance on or propensity to borrow from other disciplines is critical to a robust and organic library collection.



Dissertations in Political Science and Linguistics were 100 percent disciplinary inward, as were Philosophy and Comparative Literature. However, American Studies, Anthropology, and

Languages & Cultures were outward-oriented and utilized scholarship from other disciplines, both also crossing the social sciences/humanities divide. American Studies performance is defined as more interdisciplinary or multidisciplinary, so its score is not surprising.

Digging deeper, the ratio of journals identified as disciplinary organs to other-disciplinary organs is useful for showing how doctoral students incorporated degrees of interdisciplinary or multidisciplinary scholarship. Journal usage is tied to the unique strengths of the College of Liberal Arts graduate programs. The following findings point to unique configurations of journal usage, based upon the social sciences/humanities division of disciplines for the 20 top-cited journals.

Percentage of Social Sciences Journals Cited, by Program

Anthropology

- anthropology journals, 40 percent
- geography and conservation journals, 20 percent
- religion journals, 15 percent
- biology, sociology, and sexuality journals, 25 percent.

Communication

- communication journals, 50 percent
- applied psychology, public relations, business/management studies journals, 50 percent.

Linguistics

- linguistics journals, 100 percent.

Political Science

- political science journals, 65 percent
- communication journals, 20 percent

- sociology journals, 15 percent.

Sociology

- sociology journals, 25 percent
- gerontology journals, 15 percent
- medical sciences journals, 20 percent
- family and adolescent studies journals, 15 percent
- religious studies and multidisciplinary social science journals, 25 percent.

Percentage of Humanities Journals Cited, by Program

American Studies

- American studies journals, 15 percent
- African American studies journals, 40 percent
- literary studies journals, 25 percent
- history, science, and social science journals, 20 percent.

Comparative Literature

- literary journals, 75 percent
- history, multidisciplinary studies, or library studies journals, 25 percent.

English

- language or composition studies, technical writing, linguistics, or rhetoric studies journals, 76.5 percent
- literary studies journals, 20 percent
- biology journals, 3.5 percent.

History

- history journals, 70 percent
- music journals, 10 percent
- popular culture journals, 5 percent
- social sciences journals, 15 percent.

Languages & Cultures

- literary journals, 45 percent
- language studies journals, 30 percent
- second language acquisition and linguistics journals, 25 percent.

Philosophy

- philosophy journals, 85 percent
- natural sciences journals, 15 percent.

Interdisciplinary and multidisciplinary usage was evident in all but English, History, Comparative Literature, Linguistics, and Philosophy.

Knowledge of disciplinary usage patterns is crucial to inform research collection decisions. Generally, dissertations conformed to the strengths and focus of each department, with a few nuances. The following is a snapshot of these departmental strengths and foci at Purdue University, based on College of Liberal Arts webpages:

Social Sciences

- Anthropology: applied anthropology, medical/health anthropology, and human ecology.
- Communication: organizational communication, health communication, media, interpersonal, and public relations.

- Linguistics: language acquisition, linguistics and computation, second languages, and social linguistics.
- Political science: international relations, American government, and public policy.
- Sociology: gerontology, medical and health sociology, policy, and social structure.

Humanities

- American Studies: African American studies, gender, material culture, and feminism.
- Comparative Literature: across gender, and literary culture and literature.
- English: literary analysis, rhetoric and composition, language and linguistics, and language acquisition.
- History: American, European, and medieval history.
- Languages & Cultures: literary analysis, in French, German, Spanish, comparative studies, language acquisition, and linguistics.
- Philosophy: analytical philosophy, continental philosophy, history of philosophy, and ethics.

Except for occasional outlier dissertations, these general foci mesh neatly with the departments served by the HSSE Library. Present and future collections activity should include these findings, which provide a road map of where CLA doctoral programs are moving. There was an increasing usage of interdisciplinary and multidisciplinary sources by dissertation authors, except in Philosophy and Linguistics. These two disciplines tend to be insular and rely on their own disciplinary-based scholarship. Integrated conversation with departmental faculty and program directors, in concert with subject librarians, will necessitate continuous monitoring of doctoral research in these programs.

Availability of Formats

Although we cannot quantify the extent to which Purdue Libraries locally accessible collections limited the scope and depth of dissertations, the data indicate that, on average, the doctoral students in the CLA would have obtained 79 percent of their cited sources locally. In the humanities, dissertation authors could access 76 percent of their sources locally, while those in the social sciences found more than 84 percent. The three departments with the highest percentages of locally available sources were Communication, Political Science, and Sociology, and those mostly cited journal articles. The three programs with the lowest percentages of locally available sources were History, Comparative Literature, and American Studies. These dissertations had the highest percentages of monograph, newspaper, and non-English language citations. The data for History were affected by there being only three history dissertations in 2015, and each relied on sources in languages—Indonesian, Korean, and Turkish—that are not part of Purdue Libraries collection profiles (see Table 6).

Department	2011		2015	
	Available	Unavailable	Available	Unavailable
Humanities	76%	24%	76%	24%
American Studies	78%	22%	68%	32%
Comparative Lit	70%	30%	73%	27%
English	81%	19%	85%	15%
History	70%	30%	42%	58%
Languages & Cultures	78%	22%	78%	22%
Philosophy	86%	14%	78%	22%
Social Sciences	84%	16%	85%	15%
Anthropology	72%	28%	83%	17%
Communication	86%	14%	86%	14%
Linguistics	77%	23%	83%	17%
Political Science	83%	17%	93%	7%
Sociology	92%	8%	83%	17%
All Departments	79%	21%	80%	20%

Table 6. Local availability of source by department.

Although the four-year separation between 2011 and 2015 is too short to show general trends in changing usage and availability of formats, it is clear, at least in our sample, that the availability of the major formats remained consistent. There was a slight change in the digital-to-print ratio of book chapters between 2011 and 2015; digital increased from 5 percent to 11 percent, and print decreased from 55 percent to 44 percent (see Figure 9). There was also a noticeable increase in citations to newspapers and periodicals that were not locally accessible. This growth was in large part due to a sample of only three History dissertations in 2015 that all made extensive use of regional and non-English language newspapers.

2011 Formats	Available in Both Formats	Available Digitally	Available in Print	Unavailable	Unknown
Book Chapter	12%	5%	55%	28%	0%
Journal Article	13%	78%	3%	6%	0%
Monograph	14%	12%	48%	27%	0%
Newspapers and Periodicals	22%	32%	8%	37%	1%
Listed Formats Combined	14%	34%	31%	21%	0%

2015 Formats	Available in Both Formats	Available Digitally	Available in Print	Unavailable	Unknown
Book Chapter	14%	11%	44%	30%	0%
Journal Article	12%	78%	2%	8%	0%
Monograph	13%	10%	46%	31%	0%
Newspapers and Periodicals	14%	33%	7%	46%	1%
Listed Formats Combined	12%	43%	28%	20%	0%

Table 7. Local availability of source by format in 2011 and 2015

Doctoral students in the humanities disciplines that emphasize primary and archival or non-English sources often must search beyond Purdue Libraries. The departments with the lowest percentages of locally available sources are among the departments whose graduate students are the heaviest users of interlibrary loan (ILL) services. There is a direct correlation between these findings and the relatively high number of books that graduate students in History,

Languages & Cultures, and American Studies borrow through ILL. According to Purdue ILL data over three years (2015–2017), graduate students in History borrowed ILL books 3,833 times; in Languages and Cultures 2,666 times; and in American Studies 1,063 times. The only graduate program at Purdue to borrow books more often—9,058 times—was English, the largest program in the CLA.

Concluding Observations

Direct examination of the doctoral dissertations showed that they reflected the emphases of the programs. However, a PhD student researching a unique topic that demanded resources external to departmental and library collections emphases was not always effectively supported. An important caveat is a policy to consider acquiring specific materials to accommodate a doctoral student's unique research needs. HSSE librarians can and do attempt to fill lacunae, especially when non-English language materials are concerned. This has been the case for Turkish, Korean, and Arabic materials, where HSSE Library has not developed a core collection.

Despite the small sample of dissertations, the results of this study reflect strong library holdings supporting doctoral research, especially in social sciences and humanities programs that rely on English-language materials. The journal collection clearly met the needs of social sciences research, while the needs of the humanities, which are more book dependent, were not as well satisfied. Purdue Libraries has strong journal collections, but older monographs and other formats are less well represented in part because humanities and social sciences were not a significant part of the Purdue University curriculum until the 1960s.

This study mirrors other citation analysis studies as discussed in the literature review. In a 2012 study, for example, University of Notre Dame found that the library owned 67 percent of books and journals cited, with 83 percent in the humanities and 75 percent in the social

sciences.²² The University of Colorado Boulder owned 83 percent of the materials used by graduate students and 81 percent consulted by faculty.²³ The present study showed that the Purdue Libraries owned 76 percent of the humanities citations and 84 percent of the social sciences citations. Although Purdue University is a predominantly STEM-oriented institution, Purdue Libraries supports the humanities and social sciences at the same level as its peers.

As mentioned in the introduction of this paper, some faculty in the College of Liberal Arts have suggested that the HSSE library collection does not adequately support their department's research needs. Insofar as this research demonstrates that the collection substantially supports the needs of doctoral students, a clear disjunction exists between the results of this study and such negative perceptions of the library's collection. Since the study focused on graduate student dissertations rather than on faculty research, it cannot fully address the faculty perception of collection inadequacy. This research nevertheless provides a firm, evidence-based foundation for engaging CLA faculty and students concerning their experiences with HSSE's collection while also highlighting the collection's strengths and successes. Utilizing these findings in future focus groups and dialogue with CLA should help us understand the source of such perceptions.

This research has proved useful in several ways. It has provided a reliable quantitative assessment of the library's collection strengths in relation to graduate student research. It has also offered a means of surveying local departmental foci and disciplinary research trends, and provided important assessment data that can be shared with library stakeholders when appropriate. The authors recommend further studies exploring specific disciplines and including the bibliographies of faculty publications to determine how well those sources are represented in the collections. Although a weakness of the present study was the small sample size, limited to

only two years of data, the methodology was otherwise effective in revealing disciplinary needs and collection strengths. The authors plan to continue this research and include more years for individual departments to inform collection development decisions. They will also explore ways to streamline the data collection process to make such work more efficient and sustainable.

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Notes

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5. Robert W. Topping, *A Century and Beyond: The History of Purdue University* (West Lafayette, IN: Purdue University Press, 1988).
6. Davis and Tucker, “Change and Tradition in Land-Grant University Libraries.”
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11. Gasparotto, "A Ten Year Analysis of Dissertation Bibliographies from the Department of Spanish and Portuguese at Rutgers University."
12. Jennifer Knievel, "Alignment of Citation Behaviors of Philosophy Graduate Students and Faculty," *Evidence Based Library and Information Practice* 8, 3 (2013): 19–33.
13. Jeffrey A. Knapp, "Tracking Changes in Political Science Dissertations at Penn State: 1953–2010," *Behavioral & Social Sciences Librarian* 32, 3 (2013): 155–75.
14. Ibid., 156.
15. Suzanne M. Schadl and Marina Todeschini, "Cite Globally, Analyze Locally: Citation Analysis from a Local Latin American Studies Perspective," *College & Research Libraries* 76, 2 (2015): 136–49.
16. Ibid., 146.
17. Manuel Ostos, "What Do They Use? Where Do They Get It? An Interdisciplinary Citation Analysis of Latin American Studies Faculty Monographs, 2004–2013," *College & Research Libraries* 75, 4 (2017): 418–21.
18. This does not include 21 dissertations whose bibliographic data we could not access at the time of analysis due to embargo or other limitations. Of those 21, 17 were completed in 2015.

19. In gathering data regarding item availability, we did not consider whether an author explicitly identified the material as electronic in the bibliography.
 20. Knapp, "Tracking Changes in Political Science Dissertations at Penn State."
 21. It is important to note that the data of this study were derived from each dissertation's "Bibliography" or "Works Cited" section, not from its footnotes or in-text citations. This means that each title is only captured once regardless of how often it is used within a given dissertation. Although this does not greatly affect the considerations of this project, it does have repercussions for those fields that cite periodicals or archival materials in high numbers, such as history and American studies, because they may not list each article individually in their bibliographies.
 22. Kayongo and Helm, "Relevance of Library Collections for Graduate Student Research."
 23. Knievel, "Alignment of Citation Behaviors of Philosophy Graduate Students and Faculty."
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