

Using Curriculum Mapping to Understand Information Literacy in Political Science Curricula

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abstract: This study presents curriculum mapping of noncore course offerings in political science curricula by an early-career librarian. It combines syllabi study and curriculum mapping methods to analyze the language of student learning objectives (SLOs) from course syllabi and to integrate SLOs with threshold concepts from the ACRL Framework for Information Literacy for Higher Education and the AAC&U Information Literacy VALUE Rubric. The methods produce two sample sets: one of core concept representation and the other of additional observances for syllabi improvements. Results analyze the frequency and percentage distributions of threshold concepts in SLOs. The author outlines strategies for engaging faculty in information literacy and suggests how librarians and faculty might inform information literacy teaching in the department.

Introduction

Syllabi studies and curriculum mapping are useful practices for librarians to engage in to understand their subjects. Communities of practice in higher education and librarianship aim to understand trends in academic curricula and specific discipline and institutional practices. In academic libraries, core curriculum mappings have become popular to understand how information literacy is taught and understood by faculty. Subject librarians benefit from these mapping exercises to develop discipline understanding, thus enriching their instruction and faculty engagement.

New subject librarians, as well as established subject librarians, will find that discipline-specific curriculum mapping, focused on noncore courses, while labor-intensive, provides an opportunity to conduct an in-depth analysis of their assigned department's curricula that is scarce in the literature. Curriculum mapping offers a chance for librarians to better understand the department's teaching, and the data create a discussion



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and disciplinary documents on information literacy. Regardless of their subject area or years of experience, curriculum mapping provides an opportunity for librarians to consider how information literacy teaching can be enhanced and better integrated into student education.

This study uses interdisciplinary mapping methods drawn from the literature to analyze the language of student learning objectives (SLOs) from syllabi and to map that language to frames, learning goals, and threshold concepts from the Association of College and Research Libraries (ACRL) Framework for Information Literacy for Higher Education¹ and the Association of American Colleges & Universities (AAC&U) Information Literacy VALUE Rubric.² As the literature suggests, although these two documents are used in different fields, there is need for a common language between them so that librarians and teaching faculty can have more strategic conversations about information literacy and student learning. Using both documents presents a unique approach to curriculum mapping that could be used for establishing a shared language in faculty-librarian dialogues.

Another unique approach to this study is the creation of a custom codebook using syllabi examples to complete the map and ensure consistent alignment between the SLOs and threshold concepts. While this codebook represents the unique demands of the political science department, it can serve as an example that librarians working with other departments can emulate to create an institutional context for information literacy as “evidence of the frame in action” encouraged by ACRL in its companion document to the Framework.³ The coding process incorporates a matrix to organize the course information and threshold concepts into columns and rows. From this matrix, the methods produce two sample sets: one set of mapped alignments and the other of additional codes. While educators and librarians use matrices in curriculum mapping, they do not have two data sets to compare. Therefore, the results of each set are provided and discussed in detail. Included at the end of the discussion are the limitations of the study and conclusions regarding how this kind of curriculum mapping may be adapted by other librarians. Overall, the goals of this project are to

1. develop a better idea of how information literacy content is taught in an academic program,
2. identify knowledge gaps where information literacy instruction can support course content, and
3. develop strategies to discuss information literacy with faculty.

opportunity. New subject librarians can use curriculum mapping to review their department's degree requirements, student learning objectives, and teaching priorities to comprehend the current state of the department and to generate conversations about their roles in information literacy teaching. Established subject librarians can use curriculum mapping to have strategic conversations with faculty about enhancing library instruction and engaging with a variety of pedagogical



Literature Review

The literature review for this study examines examples of curriculum mapping in higher education and academic libraries as well as the role of syllabi in these projects. These works inform an understanding of curriculum mapping and the development of the matrix and coding practices used in the study. The ACRL Framework for Information Literacy for Higher Education and the AAC&U Information Literacy VALUE Rubric, hereafter the ACRL Framework and AAC&U Rubric, guide information literacy in library praxis and higher education, respectively. Establishing connections between these documents is essential if librarians want to develop a common language with faculty.

The ACRL Framework and AAC&U Rubric

Both the ACRL Framework and AAC&U Rubric use the premise of threshold concepts, transformative ways of thinking that lead to a new level of understanding, to present learning competencies and dispositions for information literacy. Neither document supplies SLOs; the document developers stress that educators should customize SLOs when using the document to inform their teaching.

ACRL develops guidelines for librarians to use for information literacy teaching and assessment. In 2016, the association published the Framework as a replacement document for its Information Literacy Competency Standards for Higher Education.⁴ The Framework encourages librarians to teach frames instead of skills and benchmarks. The frames function pedagogically as threshold concepts. Each of the six frames provides a series of competencies and dispositions for information literacy understanding and ability. Ideally, college students graduate able to understand and perform the competencies of each frame.

Because the frames are complex, librarians often have difficulty teaching them in a single session of instruction. Further, the language in the document may be difficult for nonlibrarians to understand. Communicating the frames' importance has been a struggle for librarians, so subject sections in ACRL are working toward developing discipline-specific versions of the frames. Pairing the ACRL Framework with general higher education or discipline-specific guides from disciplinary associations provides intersectionality with concepts prioritized by and familiar to teaching faculty and instructors. Hence, the inclusion of the AAC&U Rubric in this study.

AAC&U is an educational organization that aims to enhance the quality of public higher education and assessment.⁵ It publishes a series of VALUE (Valid Assessment of Learning in Undergraduate Education) Rubrics that can be used to assess learning outcomes and core concepts—including information literacy—for campuses and educators to incorporate into strategic learning. Like the ACRL Framework, the rubrics contain "fundamental criteria for each learning outcome, with performance descriptors" for undergraduates to establish "common dialog and understanding of student success."⁶ They can be used for curricula development and evaluation at the national, state, university, program, and course levels, though they are not intended for grading purposes. The AAC&U Rubric provides language more recognizable to nonlibrarian educators. The threshold concepts and learning outcomes present more generalized information literacy objectives that resemble the skills found in the ACRL Standards.



Together, the two documents provide a thorough and holistic understanding of information literacy. The AAC&U Rubric can be used to guide students into the more specialized threshold concepts present in the ACRL Framework and to bridge cognition gaps as well as to ease teaching faculty into discussions about information literacy and to increase faculty buy-in.

Curriculum Mapping in Higher Education

The Great Schools Partnership defines *curriculum mapping* as the process by which educators assess the curriculum for alignment with learning standards. The goal of such mapping is to ensure that the curriculum reflects a “consistent and coherent academic program by making sure that teachers teach the most important content and eliminate learning gaps that may exist between sequential courses and grade levels.”⁷ Since the development of the process by Fenwick English and prolific revision by Heidi Hayes Jacobs for K–12 environments, as noted by Chia-Ling Wang, curriculum mapping has entered academic and professional environments as a method of teaching assessment and career readiness.⁸ Wang, however, argues against the use of curriculum mapping as career readiness assessment and prefers the term *tracing* to *mapping*. Wang says that *tracing* better describes the purpose of curriculum mapping tools, using the educational philosophy of Gilles Deleuze and Félix Guattari to reclaim educational assessment from vocational training.⁹ Her assessment of mapping is supported by Maarten Simons, who argues that the change in education to prioritize professional development in students compels them into societal norms rather than allowing them to genuinely engage in learning. Simons argues that students enter college for professional and vocational training; thus, they participate only in learning activities that will prepare them for their chosen job market and ignore learning they consider nonessential to their degree path. Ultimately, students no longer come to college and universities to learn.¹⁰ Both Wang and Simons recognize that this view is not typical in higher education mapping practices. They suggest that educators maintain the philosophical integrity of the mapping process, which enriches subjective student education and knowledge development, rather than mapping for alignment with objective standards for the sake of alignment alone.

Typically, curriculum mapping incorporates the use of data organization methods to produce varying visualizations that underscore the alignment between curriculum and learning standards. Educators may use various statistical measures throughout the process. Curriculum mappings may be completed in many ways, and they should be tailored to the needs of the educators. Bick-Har Lam and Kwok-Tung Tsui discuss a highly regimented approach developed by Kay Pippin Uchiyama and Jean Radin, which requires all members of a department to engage in continuous mapping using either a semester-by-semester or year-by-year approach.¹¹ This process allows for greater discussion and deliberation among the faculty in setting objectives for specific classes and program tracks as well as for the entire program. The collaborative method of Uchiyama and Radin increased collegiality between faculty members and enhanced teaching methods and the development of student learning outcomes. Following their example, Lam and Tsui used this collaborative mapping process successfully in 2013. Their mapping visualizations include radial graphs that show the flow from one objective to another.¹²



In 2016, they added a content analysis component to the original study. The additional content analysis of the SLOs increased alignments between the components in the study.¹³

All the curriculum mapping studies surveyed include a matrix to organize the initial coding and data, while the tables and graphs produced after data are gathered vary based on the needs of the educators creating the map. Helen Joyner (Melito) argues that using a “grid” or a matrix to create the map provides the best visualization of the data as more data can be viewed on a single page. When the map is complete, the data should show a holistic view of the curriculum’s alignment with the standards. Joyner (Melito) stresses that because the map provides this overview, individual courses need not and should not cover every objective from the standards. Rather, the courses should include the standards best suited to the course content.¹⁴

Educators conducting curriculum mappings should be aware of gaps and redundancies. Joyner (Melito) and Janet Hale declare that a gap occurs when “information or skills that are necessary for a full understanding of the material or full development of an ability is not taught or not taught with the depth required.” They explain that redundancy is the result of “a [verbatim] duplication of information or skills in 2 or more courses” that is not designed as strategic “repetition” to reinforce previous learning.¹⁵

The works of Joyner (Melito), Hale, R. M. Harden, Sheryl Zelenitsky and her team, and Susan Ambrose and her coauthors indicate that student learning objectives are among the more useful components to include in a curriculum mapping, despite the many ways to complete the mapping process. They agree that when written well, SLOs represent planned and delivered learning from the course and can also communicate scalable competency learning. Analyzing the planned or delivered learning is dependent on the scope of the paired student assessment included in the mapping process. Ideally, the two should match to show the planned learning was acquired by the student. The educator should also consider that serendipitous learning will happen that cannot be mapped.¹⁶ Lam and Tsui note that this drive to use SLOs comes from the outcome-based education curriculum model.¹⁷ Wang does not share this view, however, and argues that using outcome-based mapping limits the learning environment. She claims that outcome- or objective-based mapping places too much priority on competencies for career readiness that undermines the educational environment of the university.¹⁸

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Curriculum Mapping in Academic Libraries

In academic libraries, conducting syllabi studies and curriculum mappings is not unprecedented in librarian praxis despite the various teaching roles librarians may have. Even if librarians do not teach full-semester courses, syllabi studies and curriculum mappings are useful to their work and that of their teaching faculty colleagues. Linda Rambler’s work from the 1980s examines the connection between library use and class

assignments to develop budgets, collections, instruction, services, and assignments and to inform administration and strategic planning.¹⁹ For two decades, syllabi studies in academic libraries were limited to examining syllabi to understand user needs or university expectations to develop services. Shortly after the release of the ACRL Standards, the term *curriculum mapping* appears in the literature to describe librarians' efforts to identify learning gaps between library instruction and course content, emphasizing the growing role of librarians as educators. Through targeted library instruction, librarians can address these identified gaps. Rambler's work informed the praxis of Susan Gardner Archambault and Jennifer Masunaga in 2015. They recognize Rambler's syllabi study as an early effort by an academic librarian to immerse herself in curriculum mapping and incorporate this praxis outside the traditional classroom setting.²⁰

Librarians began developing student learning outcomes for library instruction that aligned with program, university, and state requirements. In 2001, Kenneth Smith argued that the libraries' use of student learning outcomes "allow[s] libraries to determine the extent [to which] . . . their interests [align] with the expectation[s] of other academic communities in the University."²¹ A. Gabriela Castro Gessner and Erin Eldermire's 2014 study compares library instruction with university expectations as a method of assessing student performance. This study analyzes core course enrollment, course offerings, degrees available, academic level, library instruction statistics, and other factors to provide an overview of how courses fit into degree paths and the university curriculum structure.²² Further, Archambault and Masunaga's work shows librarians how to identify strategic courses to provide more effective, pedagogically supported instruction across multiple levels of alignment.²³ University and degree program alignments are a common educational practice that incorporates more critical, intensive, and successful principles from pedagogy and instructional design, areas in which librarians may lack education and training.

For Heidi Buchanan, Kathy Kavanagh Webb, Amy Harris Houk, and Catherine Tingelstad, curriculum mapping is a technique that provides access and agency to librarians to insert information literacy objectives into the curriculum. It allows librarians to show how their expertise positively impacts the curriculum and student success. Buchanan and her coauthors show that curriculum mapping provides usable data for librarians and increases their ability to impact curriculum development in their departments.²⁴ Librarians should decide on a method that will show how their instruction will have the most impact on the curriculum as well as on university goals and accreditation requirements.

Since the publication of the ACRL Framework in 2016, librarians have furthered their interest in curriculum mapping, using the threshold concepts to decide how to engage with the curriculum. Eleonora Dubicki's 2019 curriculum mapping examines SLOs and assignment alignment with the ACRL frames. Her curriculum mapping also tracks mentions of library resources. Dubicki's matrix organizes qualitative data to perform a content analysis of faculty syllabi at her institution. The map aims to provide a scaffolded context of information literacy across the institution to enhance information literacy programs and library services.²⁵ For Grace Kaletski, however, the focus of her curriculum mapping is to document how faculty understand and prioritize the frames. The frames provide more critical learning than faculty expect or often even want from library instruction, and the language in the frames does not reflect discipline-specific



terminology. Kaletski's study is unique in that she surveyed faculty on all the knowledge practices, not just the broader category of the frames. Her study reveals that faculty find all learning concepts of the frames "at least somewhat important," though they hold different beliefs on who should be responsible for teaching these ideas.²⁶

In 2012, Char Booth and Brian Mathews presented their curriculum mapping at the California Academic and Research Libraries Conference. They argue that curriculum mapping should be done with threshold concepts, not skills, as "threshold concepts are core ideas in a particular area or discipline that, once understood, transform perceptions of the subject." Further, threshold concepts articulate more accurately the learning experience and learning processes that students will likely undertake, as well as reflect the learning environment that the professor will establish. Reading a syllabus with threshold-based SLOs will make it easier for librarians to conceptualize how

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the information will be taught. Threshold-based learning also reinforces pedagogical praxis that skills-based learning does not. Booth and Mathews reason that when librarians engage with threshold concepts, whether as instructors or curriculum advisers, they shift their roles from academic supporters to "partners, collaborators, facilitators, and guides," adding more agency to their involvement in the curriculum.²⁷

At the 2019 LOEX, Virginia Cairns and Lane Wilkinson shared their methods of developing a curriculum mapping or pathway for each major at their university. Their mapping efforts created "customized, scaffolded" instruction in each discipline by highlighting which courses are best to introduce specific information literacy threshold concepts to ensure that students get "meaningful progression of learning outcomes" in their majors. Cairns and Wilkinson reduced librarians' workloads at their university by encouraging librarians to provide instruction only to courses highlighted in the pathway document.²⁸

Using Syllabi in Curriculum Maps

Syllabi studies are briefly considered in the literature as exercises to include in curriculum mappings, but some underlying features in syllabi make them essential to the mapping process. Mary Eberly, Sarah Newton, and Robert Wiggins point out that syllabi function as the first communicative document about course expectations by the instructor and can have contractual implications by which students must abide. Syllabi have crucial roles as educational records for administrative needs such as grievances, transfer of credits, and public access as well as organizational documents in departments and colleges.²⁹ While syllabi are usually provided on the first day of class, students frequently contact professors or download syllabi from the learning management system before classes start to order required texts and begin scheduling their study hours for exams. Partial syllabi containing the course descriptions and learning objectives may also be distributed around a department as advertisements to entice students to enroll in the class. During

the semester, instructors frequently refer students to the syllabus when they inquire about assignments, the schedule of lectures and exams, and expectations—including those mandated by the university.

Despite the importance of syllabi, Eberly, Newton, and Wiggins note that standardization is rare. They urge the use of syllabi studies to provide guidelines on syllabi format, development, and state educational expectations. Their research analyzes syllabi according to several categories: acknowledgment of general education guidelines, basic course information, required reading, course format, course content, performance evaluation, use of technology, and responsibility for learning. Their study found that calendars, schedules, and grading policies are the most common components of syllabi, while academic conduct, “method of inquiry,” and assignment details are less often provided. They also observed repetitive use of one syllabus for multiple sections of a course. Their study concluded that syllabi are not used as learning tools at their institution.³⁰ Eberly, Newton, and Wiggins suggested that faculty lose an opportunity to include syllabi in learning-centered pedagogical practices when they do not structure syllabi as learning tools.

The syllabus study conducted by Roxanne Cullen and Michael Harris emphasizes the use of syllabi to frame courses in learner-centered pedagogy. They cite May Beaudry and Tracey Schaub’s 1997 work, which argues that components of learner-centered syllabi should include instructional goals and performance objectives, “organizing the content of the course, or as [Beaudry and Schaub] say ‘chunking’ content so that students can see the relationship of the parts and see the overall framework and rationale” of the course.³¹ This work is supported by the ideas of Judith Grunert O’Brien, Barbara Millis, and Margaret Cohen, who prioritize learning objectives as one method of framing syllabi in learner-centered pedagogy. Grunert O’Brien, Millis, and Cohen write that learner-centered syllabi ultimately “shift” the focus of the syllabi from what the instructor intends to teach to resources that “promote learning and intellectual development.”

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assignments.³³ Writing SLOs as described in the literature leads to the development of learner-centered syllabi, a practice in which faculty should engage to help with this shift to learner-centered praxis.

Their study also shows that few faculty engage in this praxis because disconnects between learning objectives, assignments, and course rationale hinder framing the syllabi as learner-centered.³² The study conducted by Erastus Karanja and Donna Grant aims to provide a similar content analysis of learner-centered syllabi, and their results also indicate low scores in learning communities, assessments, and

Developing a Curriculum Mapping

This curriculum mapping research uses syllabi content analysis based on a matrix to indicate if classes teach a core concept. Studies in the literature inform the methods used



in this discipline-specific map. The project combines the methods of Archambault and Masunaga with those of Gessner and Eldermire to develop a matrix but flips the format of Archambault and Masunaga so that each course's map is a row of information instead of a column. Gessner and Eldermire inspire the method of coding by using numbers and nonbinary codes (such as yes or no or 0 or 1).³⁴ By using these two methods, the discipline map provides a unique summary of core representation and additional feedback that can be shared with the department. Further, the codebook development follows the work of Lua Gregory and Shana Higgins, whose article covers how the core values of librarianship can be mapped to the ACRL Framework.³⁵ Gregory and Higgins provide an example of how to develop a codebook for content analysis practices.

In 2017, Gregory Hardin, Carol Hargis, and Brea Henson conducted a core curriculum mapping project using both the ACRL Framework and the AAC&U Rubric.³⁶ The project was part of the Information Literacy Initiative at the University of North Texas (UNT) Libraries in Denton.³⁷ Their work followed the methodology of Archambault and Masunaga and Gessner and Eldermire by combining the 0, 1 binary in the matrix. Hardin, Hargis, and Henson mapped student learning outcomes to determine which core courses address components of the AAC&U Rubric and the ACRL Framework and to identify gaps that could be filled with library instruction. Their project had a significant impact on the university's English Department, whose first-year writing coordinator redesigned its curriculum to better align with both guiding documents so that students would have a more solid foundation of information literacy before their upper-level coursework. After the completion of their curriculum map, the three discussed their findings with subject librarians, enabling them to use data to strategically plan their instruction sessions and guiding them to design discipline-specific maps. Offering to serve as consultants to their colleagues, Hardin, Hargis, and Henson aim to develop a community of practice on curriculum mapping at their institution.

Methodology

This study examines SLOs from political science class syllabi and maps their threshold concepts to the ACRL Framework and the AAC&U Rubric; these methods are based on established learner-centered practice expressed in the literature and on practices used by Hardin, Hargis, and Henson. The phrase *threshold concepts* is used in this study to add clarity to ongoing disagreements about the terms *threshold* and *core concepts* in the library community as they relate to the ACRL Framework and to establish a common language for librarians and nonlibrarians who may use this work later. Using the ACRL Framework will support the development of threshold concepts in librarianship, as the literature suggests.

This study combines content analysis practices from syllabi studies with data-driven curriculum mapping using a matrix to organize the data. Several variables are coded and will be discussed at length. The data analysis incorporates frequency and percentage calculations. This study seeks to answer the question: How are political science faculty teaching information literacy concepts? The researcher further aims to (1) identify information literacy learning gaps and (2) develop strategies to discuss information literacy with faculty. The overall aim of the project is to provide an example of discipline and institutional curriculum mapping using cross-disciplinary and learner-centered approaches.

The study analyzes syllabi from political science classes from the fall and spring semesters at UNT over a three-year time frame: fall 2017 to spring 2020. The syllabi from courses held only in the fall and spring semesters are considered the syllabi population (N_i). The choice of this range of six academic semesters is based on three reasons: (1) The university's core curriculum mapping project represented the 2017 to 2018 academic year, and this study covers the overlap between the projects. (2) Rotation of courses seemed to happen every two to three years, so there was a higher chance of most track electives being taught in this time frame. (3) Noncore courses are not taught in the summer.

The university registrar provided files of all courses taught during these six semesters. The researcher copied listings of political science undergraduate-level courses, excluding core courses that are listed at the sophomore or second-year, 2,000-level and were previously mapped by Hardin, Hargis, and Henson. The syllabi analyzed in the study were mainly from junior, 3,000-level and senior, 4,000-level courses except for one 2,000-level course required for majors, Introduction to Research Methods.³⁸ A graduate student assistant located and downloaded syllabi from the university's Faculty Information System, a public database of faculty profiles, courses, and department information.

Course information from the registrar's files was entered into an alignment matrix. The same matrix template developed in the core curriculum mapping was used to ensure continuity between the two projects. The matrix had columns for the semester, course name, course code, instructor, and status (removed for publication), and 11 abbreviated letter codes for each core concept (see Table 2). This matrix provided the best organization and representation of the alignment and coding data.

The principal activity to complete the discipline map was identifying the alignment between SLOs and the threshold concepts from the guiding documents. For this study, SLOs are defined as concepts, goals, and outcomes that students gain by completing the course. They include objectives tailored to the class content and those addressing university-level requirements: critical thinking skills, communication skills, empirical and quantitative skills, teamwork, personal responsibility, and social responsibility.³⁹ These university-level objectives are required by the state and often appear on syllabi for core courses. Faculty may choose how to incorporate these objectives into their courses and may provide either the university-approved language or wording reflecting how the course addresses the concept. The goal of SLOs is to convey learning to the student so that both student and instructor can assess when and how learning occurs. Therefore, course objectives, goals, rationale, and descriptions are not considered SLOs because they emphasize what the course will cover and not what students learn by taking the course. The differentiation of SLOs from course objectives is significant. These differences are shown in Table 1.

The focus on student learning within the SLO structure prioritizes the learning experience and aligns with learner-centered praxis, pedagogy, and theory from studies in curriculum development, education, instructional design, and learning technology. It also aligns with philosophical and ontological discussions of education, linguistics, and the instructor-student power structure. Simply put, SLOs must express what students learn by taking the course. They can be written from either the second- or third-person perspective, as shown in Table 1, and are conveyed in either a narrative or a bulleted list indicating the student as the learner. The SLOs from the syllabi population reflect university-level learning requirements, class-level learning requirements, or both. Un-



Table 1.

Examples of student learning objectives (SLOs) compared to course descriptions*

Student learning objective	Course description
Students apply Socratic political theory in class discussions and assignments.	The course examines Socratic political theory within the context of modern political agents.
In this course, you Shepardize† cases and create legal writing examples including briefs.	We will learn to brief and Shepardize a legal case in addition to other forms of legal writing.
Students prove statistical learning by completing weekly assignments using SPSS software.	This course contains a weekly lab for the instructor to teach you how to use SPSS software.

*To maintain the anonymity of faculty, Table 1 provides fictional examples of student learning objectives and course descriptions. They were inspired by course content in the department but are not taken from the syllabi.

†Shepardizing a case involves checking Shepard's Citation Service to verify the validity of case law, statutes, and other legal documents.

Understanding the difference between SLOs and course descriptions was important during the coding process as many syllabi contain only course descriptions and not SLOs. Due to the number of these cases, the researcher established an additional code to track these instances during the coding process.

To methodically identify alignment between the SLOs and the core concept guiding documents, the researcher created a codebook that recorded abbreviations and annotations for coding continuity. The codebook organized SLOs from the syllabi into categories based on the ACRL Framework and AAC&U Rubric (see the Appendix for samples from the codebook). This practice was established by Hardin, Hargis, and Henson. The researcher reviewed all the syllabi and decided if the SLOs aligned with the threshold concepts by copying the SLOs directly under the name and description of the guiding documents' threshold concepts. She aimed to list the SLOs exactly as they were written by the faculty. In some cases, SLOs matched to multiple threshold concepts. The researcher looked specifically for such phrases as "students will learn" in the paragraphs and lists where SLOs are typically presented on syllabi. This step allowed her to preview the syllabi for distinctions between the SLOs and course descriptions and make more reflective choices about how an objective matched a core concept. The researcher thought about how the themes and ideas of the core concept would relate

In some cases, SLOs matched to multiple threshold concepts.



to the discipline and the department's priorities. For example, in the case of the core concept "Authority Is Constructed and Contextual," she selected SLOs that had students question or engage with the authority of

- social science research methods, including generating hypotheses and using empirical methods and statistical software;
- domestic and international political institutions, government actors, and legal bodies, including Shepardizing and citing cases—that is, checking Shepard's Citation Service to verify the validity of case law, statutes, and other legal documents;
- discipline theory and studied philosophers; and
- their own authority as emerging political scientists and scholars.

Once the codebook was created, the researcher and a graduate student assistant could quickly assign codes in a matrix spreadsheet. The matrix contained columns for the semester, course name, course code, instructor, and status (removed for publication), and an abbreviated letter code for each core concept as shown in the codebook.⁴⁰ See Table 2.

Information about each class was placed in the row cells. During the coding process, a core concept received a numerical code of 0, 1, 2, 3, or 4 based on alignment and representation. The codes and their meaning are listed in Table 3.

If an SLO on the class's syllabi matched any of the 11 threshold concepts from the guiding documents, the class received a code 1 for that core concept. The letter code abbreviations are provided in Table 4.

If there was no match between SLOs and core concepts, the class received a code 0. The 0 and 1 codes function as binary variables, which are typical in curriculum mapping exercises like those reviewed in the literature.

What makes the Common Core Curriculum Mapping and this discipline map unusual is that the researcher and her assistant also coded additional variables for outlying situations found in both the syllabi and the SLOs. These additional variables formed a second data set that included:

1. Instances where syllabi were not available (represented by code 2).
2. Instances where syllabi did not provide SLOs (represented by code 3)
3. Instances where a downloading error occurred while attempting to obtain a syllabus from the Faculty Information System (represented by code 4).

Syllabi with these instances could not be used in the study as they could not be mapped. Instead of excluding these syllabi from the study, the researcher used these additional codes as an opportunity to discuss syllabi best practices with faculty. Overall, these situations and codes represent observations of faculty practices that might be improved. Further reasoning for collecting these data and best practices are provided in the "Data Analysis and Results" section.

Once the matrix was complete, the frequencies and percentage of representation of all the codes were calculated using the methods established by the Common Core Curriculum Mapping Project. The histogram function and manual frequency percentages were used to complete the calculations. The histogram function is available in an add-in data analysis tool that can be downloaded in the Excel options under the file



Table 2.

Sample matrix layout for the course Introduction to Research Methods

Semester	Section	Frames from the ACRL Framework for Information Literacy for Higher Education*						Concepts from the AAC&U Information Literacy VALUE Rubric†				
		AC	IP	IV	RI	SC	SE	DE	AI	EI	UI	EL
Fall 2017	002	1	1	1	1	0	0	1	0	1	1	0
Fall 2018	003	3	3	3	3	3	3	3	3	3	3	3
Fall 2019	001	1	0	1	1	0	0	1	0	0	1	0
Spring 2018	001	2	2	2	2	2	2	2	2	2	2	2
Spring 2019	002	1	0	1	1	0	0	1	0	0	1	0

*AC stands for "Authority Is Constructed and Contextual," IP for "Information Creation as a Process," IV for "Information Has Value," RI for "Research as Inquiry," SC for "Scholarship as a Conversation," and SE for "Searching as Strategic Exploration."

†DE stands for "Determine the Extent of Information Needed," AI for "Access the Needed Information," EI for "Evaluate Information and Its Sources Critically," UI for "Use Information Effectively to Accomplish a Specific Purpose," and EL for "Access and Use Information Ethically and Legally."

Table 3.

Numerical codes used in the matrix and for data analysis

Code	Meaning
0	Standard or frame is not indicated
1	Standard or frame is indicated
2	Syllabi not available from Faculty Information System at time of analysis
3	SLOs not on syllabi as learning objectives
4	Faculty Information System download error



Table 4.
Code abbreviations for threshold concepts

Code	Threshold concept
AC	Authority Is Constructed and Contextual
IP	Information Creation as a Process
IV	Information Has Value
RI	Research as Inquiry
SC	Scholarship as a Conversation
SE	Searching as Strategic Exploration
DE	Determine the Extent of Information Needed
AI	Access the Needed Information
EI	Evaluate Information and Its Sources Critically
UI	Use Information Effectively to Accomplish a Specific Purpose
EL	Access and Use Information Ethically and Legally

tab. This function creates frequency tables of highlighted data using what would be considered a “key” table of all the numerical and letter codes (see Table 3 and Table 4). The frequency tables were generated, and the percentages of each of the numerical codes were calculated. To make the matrix data easier to analyze, the binary pair of codes 0 and 1 was treated as the primary sample set (n_1) and the additional codes as the second sample set (n_2), allowing equal time for results and simplifying the discussion on each set of results, especially because the primary sample set needed additional data analysis and the second sample set did not. The researcher and her assistant coded 396 syllabi (N_1) from the fall and spring academic semesters from 2017 to 2020. After separating the binary codes and the additional codes, the primary sample set equaled 89 syllabi (n_1), and the secondary sample set comprised 307 syllabi (n_2), as shown in Table 5. In both sample sets, an individual syllabus was considered the unit of analysis.

The secondary sample set did not need additional data analysis beyond the generation of the frequency and percentage table. A discussion of this table is provided in the “Data Analysis and Results” section. The primary sample set, on the other hand, required generating frequency tables of each of the 11 letter abbreviation codes to understand the alignment between the threshold concepts and SLOs. The threshold concepts were analyzed to provide more detail about the alignment between the SLOs and the threshold concepts of the guiding documents, which can also be understood as the representation of the threshold concepts in the SLOs. Table 7 ranks the highest to lowest percentages of threshold concepts in the SLOs (see Table 7). Tables and graphs were created to conduct a comparative analysis (see Figures 1 and 2) of how information literacy is taught in the discipline. The findings are discussed in the next section.



Table 5.
Frequency and percentage of syllabi sample sets

Syllabi analysis	Frequency	Percentage
Syllabi in primary set (Code 0 + Code 1) (n_1)	89	22.48%
Syllabi in second set (Code 2 + Code 3 + Code 4) (n_2)	307	77.52%
Total syllabi (N_1)	396	100%

Data Analysis and Results

Primary Sample Set

The primary sample of 89 syllabi represents 22.48 percent of the syllabi that met the primary objective of the study: to discern alignment or representation of threshold concept ideas in the SLOs on syllabi. Code 0 and code 1 mark this alignment or representation in the same manner as a no/yes would in a qualitative study. Code 1 indicates that a core concept is represented in the SLO language. The mean frequency of code 1 is 41.1 coding occurrences, and the mean percentage of representation is 46.18 percent. This average can be used in comparing the frequency and percentages of the 11 threshold concepts and their distribution in the syllabi SLOs to discern if a frequency or percentage is below average in the syllabi. Table 6 shows the total SLO percentages in the primary sample set from the highest to the lowest frequencies. To complement this table, a bar chart and line graph with data tables were created (see Figures 1 and 2) indicating frequencies and percentages of code 0 and code 1.

Side-by-side, the data tables and graphs provide different visualizations of the data that inform comparisons of and relationships between the alignments of the threshold concepts in syllabi SLOs. Figure 1 identifies which threshold concepts are not addressed in the curriculum so that librarians can prioritize when and where to introduce them in library instruction. Figure 2 repeats the percentages presented in Table 6, indicates the size of the primary sample, and provides context for the percentages in the study. Table 6, Figure 1, and Figure 2 provide visualizations that enhance the understanding of the relationships between the scores and allow the researcher to prioritize threshold concepts that will complement the course's SLOs during library instruction sessions.

Some threshold concepts have representation well above the mean. The core concept with the highest coding frequency is the ACRL frame "Authority Is Constructed and Contextual" (AC). This core concept matched 98.88 percent of the time during the coding process. The second-highest score is "Use Information Effectively to Accomplish a Specific Purpose" (UI) from the AAC&U Rubric with an 85.39 percent match in representation. The ACRL frame "Information Has Value" (IV) scored the third-highest match with 79.76 percent representation. The fourth-highest match was "Evaluate In-



Table 6.

Student learning objectives (SLOs) percentages in primary sample set

SLO	Percentage
Authority Is Constructed and Contextual (AC)	98.88%
Use Information Effectively to Accomplish a Specific Purpose (UI)	85.39%
Information Has Value (IV)	79.76%
Evaluate Information and Its Sources Critically (EI)	60.67%
Research as Inquiry (RI)	49.44%
Information Creation as a Process (IP)	32.58%
Scholarship as a Conversation (SC)	29.21%
Determine the Extent of Information Needed (DE)	28.09%
Access the Needed Information (AI)	21.35%
Access and Use Information Ethically and Legally (EL)	14.61%
Searching as Strategic Exploration (SE)	7.87%

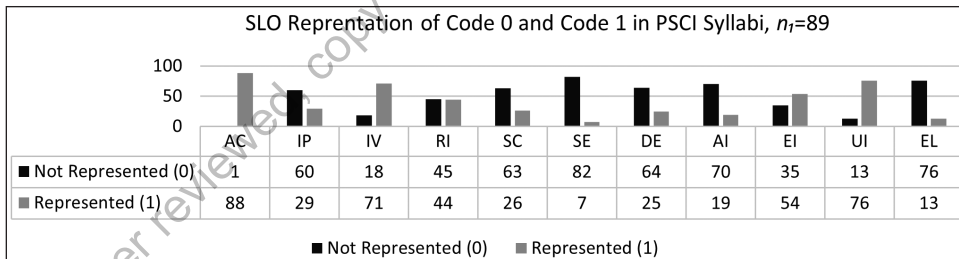


Figure 1. The frequencies of representation of code 0 and code 1 in political science (PSCI) syllabi. AC stands for "Authority Is Constructed and Contextual," IP for "Information Creation as a Process," IV for "Information Has Value," RI for "Research as Inquiry," SC for "Scholarship as a Conversation," SE for "Searching as Strategic Exploration," DE for "Determine the Extent of Information Needed," AI for "Access the Needed Information," EI for "Evaluate Information and Its Sources Critically," UI for "Use Information Effectively to Accomplish a Specific Purpose," and EL for "Access and Use Information Ethically and Legally."

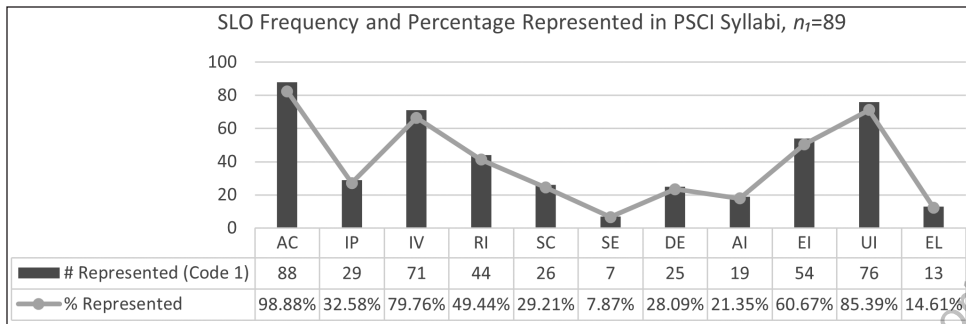


Figure 2. The frequencies and percentage of representation of code 1 in political science (PSCI) syllabi. AC stands for "Authority Is Constructed and Contextual," IP for "Information Creation as a Process," IV for "Information Has Value," RI for "Research as Inquiry," SC for "Scholarship as a Conversation," SE for "Searching as Strategic Exploration," DE for "Determine the Extent of Information Needed," AI for "Access the Needed Information," EI for "Evaluate Information and Its Sources Critically," UI for "Use Information Effectively to Accomplish a Specific Purpose," and EL for "Access and Use Information Ethically and Legally."

formation and Its Sources Critically" (EI) from the AAC&U Rubric with a 60.67 percent representation match.

As a librarian, the researcher expected these frames to be represented strongly in the SLOs, but the nature of political science education strongly enforces these concepts as well. Students engage with domestic and international laws, constitutions, policies, and theories, and they analyze the history and actions of all types of governments, conflicting leaderships, regimens, and rebel groups. It is essential to talk and think critically about the authority or value of information in a political science classroom. While the Political Science Department emphasizes empirical and statistical research and requires undergraduates to learn how to find raw data sources and perform regression equations, students must also complete a wide range of writing assignments beyond statistical research papers and annotated bibliographies. For example, policy and legal courses encourage students to write policy and legal briefs, theory courses require close reading analysis, and peace study courses require historical research on treatises and tribunals. Incorporating elements from these frames can be done in a way that envisages library resources as products that may reflect the systemic racism, elitism, and privilege of higher education. Students need to be as critical of library resources as they are of the information they find. Encouraging this critical use of library resources helps students become more critically inquisitive in their research processes, a mindset that will support their endeavors after graduation, whether in the private sector, government, nonprofit agencies, social justice organizations, law offices, or graduate or law school.

It is essential to talk and think critically about the authority or value of information in a political science classroom.

Other threshold concepts can be organized into three categories: metacognitive threshold concepts, skill-based or ability threshold concepts, and hybrid threshold con-

cepts. Metacognitive threshold concepts include “Information Creation as a Process” (IP), “Research as Inquiry” (RI), and “Scholarship as a Conversation” (SC). Ability threshold concepts include “Searching as Strategic Exploration” (SE), “Determine the Extent of Information Needed” (DE), and “Access the Needed Information” (AI). Hybrid threshold concepts have both skill-based abilities and higher metacognitive functions. “Access and Use Information Ethically and Legally” (EL) overlaps both categories. Creating citations is an ability-based concept but also requires understanding relationships between citation methods, plagiarism, academic integrity, and similar concerns, which demands more metacognition.

In both categories, faculty may avoid teaching the threshold concepts for a number of reasons, including:

1. They lack knowledge of the topics or confidence to teach them.
2. The concepts do not fit within the scope of their course.
3. The concepts are too broad to address in a course.
4. Faculty assume these concepts are taught somewhere else in the curricula.
5. Faculty assume students have this knowledge when entering college or will learn these concepts outside the classroom—possibly on their own or through interactions with librarians or staff in writing or learning centers.⁴¹

This research considers the implications of why certain threshold concepts are less represented as well as the relationships between some of the concepts.

Metacognitive Threshold Concepts

The data indicate that three threshold concepts have moderate to moderately low representation in the SLOs: “Research as Inquiry” (RI) with 49.44 percent representation, “Information Creation as a Process” (IP) with 32.58 percent representation, and “Scholarship as a Conversation” (SC) with 29.21 percent representation.

Teaching research processes through threshold concepts such as “Research as Inquiry” and “Information Creation as a Process” or finding ways to engage students in scholarly dialogue through “Scholarship as a Conversation” is a challenge. They are difficult ideas for students to understand, and learners need consistent, repetitive instruction and reinforcement through assignments. While students may understand that writing is a process, conceptualizing research as its own process as well as part of the writing activity requires a level of metacognitive appreciation that students may lack. Developing a topic, asking the right questions, finding resources, and evaluating those resources are not

Conceptualizing research as its own process as well as part of the writing activity requires a level of metacognitive appreciation that students may lack.

operations that students think about as a process. Likewise, considering research as a method to engage critically with scholarship or professional documents to establish a dialogue between the student and author takes time for students to understand. The complexities of these threshold concepts and the difficulty of integrating them with other learning concepts explain their relatively low representation.



For example, “Use Information Effectively to Accomplish a Specific Purpose” and “Research as Inquiry” can be intertwined for assignments that fall outside the realm of a traditional research paper. Professional and legal writing still requires research processes, so SLOs can easily match both concepts. Since careers in political science are not limited to academic pursuits, this interpretation of the data fits within the context of the discipline. Understanding the different types of assignments in the department supports moderate alignment of “Information Creation as a Process” with SLOs, which would require students to use and synthesize information differently to complete various assignments, such as policy development and Shepardizing cases.

Both policy development and Shepardizing cases require an understanding of the history of the policy or case and enforce the conversational nature of such work found in the core concept of “Scholarship as a Conversation.” Research for both academic and professional papers allows students to participate in the dialogue on certain issues, but many students do not understand the relationship between their work and the policy or case upon which they build. As the metacognition core concept with the lowest percentage, understanding threshold concepts from “Scholarship as a Conversation” and discussing this relationship with students are missed opportunities to make research more interesting and effective at the undergraduate level. Students considering prelaw and law school would especially benefit from learning how research is a dialogue as it relates to the connectivity between past, present, and future legal rulings.

Skill-Based or Ability Threshold Concepts

The data indicate that the threshold concepts “Searching as Strategic Exploration” (SE) with 7.87 percent representation, “Determine the Extent of Information Needed” (DE) with 28.09 percent representation, and “Access the Needed Information” (AI) at 21.35 percent representation are seldom addressed in the SLOs. These threshold concepts impart an understanding of the importance of intentional, purposeful searching, accessing information in ways that support a student’s information needs, and using information ethically through citation methods and writing methods. Searching, accessing, understanding, and citing information are often misunderstood as skills to use and navigate library resources, databases, and computer programs. The skills to understand these threshold concepts resemble the learning objectives from the 2000 ACRL Information Literacy Competency Standards for Higher Education, the first publication by ACRL to address information literacy in higher education, which served as a checklist for librarians to teach library resource skills to students.⁴²

The skills associated with “Determine the Extent of Information Needed” and “Access the Needed Information” are typically those the faculty expect students to develop outside the classroom. Both require students to know what types of information they need for their research and papers and how to locate it. The lack of representation in the syllabi indicates that faculty seldom recommend books, journals, databases, or public resources in the syllabi SLOs. Including library resources in SLOs would help ensure their use by students. Since completing this study, the researcher has encouraged faculty members to include database resources in their syllabi.

“Determine the Extent of Information Needed” and “Access the Needed Information” are foundational for students’ ability to understand threshold concepts that fall



Students must know how to pick the right resource for the information they need, use the right terminology to conduct a search, and develop complex search methods beyond using Boolean operators such as *and*, *or*, and *not*.

under “Searching as Strategic Exploration.” Students must know how to pick the right resource for the information they need, use the right terminology to conduct a search, and develop complex search methods beyond using Boolean operators such as *and*, *or*, and *not*. The critical thinking, planning, and reflective inquiry needed to perform competencies in this core concept require practice and repetition, which are difficult in an age of instant gratification. Google may tempt students lacking any of these three threshold concepts, and it especially undermines “Searching as

Strategic Exploration.” To address student research performance, SLOs must include competencies such as keeping a research journal that documents how students develop their research processes.

Hybrid Threshold Concepts

As an ability concept, “Access and Use Information Ethically and Legally” (EL) requires students to adhere to academic honesty standards. It had a low representation at 14.61 percent. At first, this lower representation seemed alarming, but this core concept may be expressed elsewhere in the syllabi as assignment descriptions and academic honesty statements. Presenting it elsewhere in the syllabus and not as a learning objective implies, however, that faculty expect students to follow “the rules” without teaching them how to do so. Faculty may expect students to learn citation methods on their own time, but citation can be confusing to learners, especially to students whose high schools did not prepare them for college expectations. As a discipline, political science has a unique citation method developed by the American Political Science Association (APSA). The APSA system is based on the *Chicago Manual of Style* author-date method, which uses parenthetical references in the text to direct readers to a reference list. To further complicate the citation landscape, legal citations must follow another style guide, *The Bluebook: A Uniform System of Citation*, published by the law review associations of Columbia, Harvard, and Yale Universities and the University of Pennsylvania.

To effectively use and understand the relationships between different citation methods may be difficult for undergraduates. Students must identify what type of source they are using, which requires a cognitive understanding of the range of sources available to them. They also need the skill to create the citation and edit it as necessary. Data sources require even more understanding and skill in citation creation—students must know the differences between aggregate data and raw data. The issues covered by “Access and Use Information Ethically and Legally” go beyond source identification and citation format. The concept also incorporates proper use of research in writing via paraphrasing, summarizing, quoting, incorporating statistics, and using data visualizations. It even delves into the serious matters of academic integrity, codes of conduct, intellectual freedom, research integrity, and legal and copyright concerns, including patents and trademarks, as well as broad concepts of information and media literacy.



Secondary Sample Set

While not directly related to the curriculum mapping objectives, these additional codes provide a unique opportunity for syllabi studies and curriculum mapping activities. The additional codes were included for two reasons: (1) to establish more continuity between the core map and the discipline map, and (2) to conduct research in a manner that complements the practices in political science. Having these data will allow librarians to open discussions with the political science faculty on their courses, which could then allow for a deeper exploration of the study's findings.

Table 6 provides the frequency and percentage of representation among the additional codes. Three hundred and seven classes received one of the three additional codes, representing 77.52 percent of the total population of syllabi. These codes indicate additional issues with the syllabi that the teaching faculty may need to address for state and accreditation compliance.⁴³ Code 2 indicates the number of syllabi not available in the Faculty Information System for the class of record: 240 syllabi received this code and are considered missing. Most instances of code 2 are from classes held before the 2019 fall semester. Code 3 specifies the number of syllabi that did not provide SLOs at all or that indicate course objectives, goals, rationale, and descriptions but not SLOs as defined by the study. There are 67 instances of code 3. Since no downloading errors occurred, code 4 is not exhibited in the study.

Conclusion

To Hardin, Hargis, and Henson, providing these data to faculty was just as important to the success of the department as the main variables of the study were. These data can be used to begin conversations about SLOs that can make faculty more receptive to the primary data set. After Hardin, Hargis, and Henson shared data from the 2017 Common Core Curriculum Mapping Project, the English Department redesigned the first-year writing program.⁴⁴ Their work as well as this study may give librarians a stronger voice in discussions about syllabi best practices. Librarians conducting syllabi studies and curriculum maps may form communities of practice at their institutions.

This syllabi analysis and curriculum mapping comprise a case study of discipline and institutional exercises conducted by an early-career librarian. The study compared syllabi SLOs to the ACRL Framework and AAC&U Rubric to establish a common language between librarianship and higher education practices. This study yielded two data sets. One syllabi sample set provides data that argue for refining SLO writing practices to better align them with learner-centered pedagogy. The second syllabi sample set identifies syllabi archival practices that affect the primary study.

Librarians seeking to develop syllabi studies and curriculum mappings should keep in mind that their faculty may not have learned how to write SLOs. They can work with faculty to write learner-centered SLOs. Hardin, Hargis, and Henson recommend writing objectives as bulleted lists under an introductory phrase such as "students learn" to make the SLOs easier to find and to directly connect them to learning.⁴⁵ The bulleted list format follows the literature recommendations and allows for SLOs to be found quickly during reviews. University accreditation teams also perform syllabi content analysis for

Table 7.
Secondary sample set of additional codes

Secondary sample set	Frequency	Percentage
Total syllabi with additional codes (code 2 + code 3 + code 4)	307	77.52%
Syllabi not available (code 2)	240	78.18%
Syllabi without student learning objectives (code 3)	67	21.82
Syllabi with Faculty Information System downloading error (code 4)	0	0%

accreditation, so librarians helping their faculty to address SLO writing will positively impact accreditation at their university.

This study analyzed syllabi from three years' worth of courses. From the primary data set, "Determine the Extent of Information Needed" (DE), "Access the Needed Information" (AI), "Access and Use Information Ethically and Legally" (EL), and "Searching as Strategic Exploration" (SE) are the threshold concepts needed in the political science curriculum to improve information literacy learning. The study found that 240 classes (78.18 percent of the additional codes) did not retain syllabi in the Faculty Information System, likely because faculty replace old syllabi with newer versions each semester

Librarians helping their faculty to address SLO writing will positively impact accreditation at their university.

and do not keep a historical record of past syllabi. The recommendation is that faculty consider retaining older syllabi. Assisting faculty with writing SLOs, providing targeted information literacy, and recommending different syllabi archival practices are key areas where librarians can coach faculty at their universities.

This study is useful for librarians to develop a knowledge base of how information literacy is taught by the political science faculty and to better perform their roles as subject liaisons and teaching collaborators. The researcher has successfully collaborated with a faculty member teaching 4,000-level courses on policy research and analysis to prepare students for fieldwork, the job market with agencies, graduate school, and law school. As the data emphasized the need to focus information literacy instruction on the threshold concepts "Determine the Extent of Information Needed" (DE), "Access the Needed Information" (AI), "Access and Use Information Ethically and Legally" (EL), and "Searching as Strategic Exploration" (SE), the researcher discussed with the instructor ways to incorporate these concepts into the course. The researcher provided librarian instruction, which was delivered as synchronous online sessions and asynchronous video



tutorials during the COVID-19 pandemic and in person after the lockdown. After these sessions, the researcher conducted five research sessions to assist students on the parts of the assignment. She stressed the importance of keeping a research journal so that the students can develop strategic research abilities. She assisted the students with multi-term searches in news databases and public government sites and answered complex citation questions during these sessions.

While the data from this study are unique to the context of the researcher's institution and department's needs, these concepts express the typical research needs librarians are asked to address. Librarians might consider framing topics into data-driven research questions, selecting discipline-specific databases and data resources, using databases effectively and strategically, and ethically using the information found, all core objectives in teaching information literacy. Librarians may see the data results as additional evidence that these basic concepts and skills are still essential to the profession and that discussions and collaboration between faculty and librarians are needed. Much work still needs to be done to intertwine information literacy with institutional goals, and librarians may find ways to integrate information literacy in other areas of their work based on their institutional needs.

During this study, the researcher created a process manual that can be used by librarians to develop discipline-specific codebooks and guide them through the data manipulation process. This work is available in the ACRL Framework for Information Literacy Sandbox and the University of North Texas repository. The analyzed data set from this study is also available at the University of North Texas data repository.⁴⁵

Conducting syllabi analysis and curriculum mapping allows librarians to participate in the ever-growing curriculum mapping community of practice in librarianship. The literature shows a strong trend of using curriculum mapping to understand the core curriculum at universities, but there is a need for more subject librarians to develop discipline-specific maps to identify how information literacy is taught in upper-level coursework. Such mapping will help ensure that students graduate with the knowledge they need to succeed in graduate school, professional environments, and everyday life.

Librarians face difficulties in teaching information literacy in a single 50-minute instructional session. A short instruction session once a semester is not enough to introduce navigation and platform-use skills, to contextualize the skills in information literacy practices and strategies, or to teach higher-order critical thinking skills, all of which are intertwined with complex research processes. Librarians must find ways to prioritize and strategize learning to make these sessions effective. Having data that show gaps in learning and other areas for improvement allows librarians to focus their teaching. The ACRL Framework calls on librarians to adapt their teaching to the unique demands of their institution by developing learner-centered and scaffolded approaches to information literacy teaching as a community of practice. Creating curriculum maps and doing syllabi studies are steps librarians can take to contextualize their work.

Limitations, Further Research, and Additional Outcomes

There are two main limitations to this research study. First, it did not include formal inter-rater reliability testing. The researcher reviewed the syllabi to copy SLOs directly



into the codebook and enlisted coding assistance from a graduate student. Providing the graduate student with a list of presorted SLOs allowed her to quickly complete the coding matrix. When the graduate student encountered SLOs that were missed in the first review, the student and researcher reviewed the SLO and discussed which learning concept it reflected. A sample of the codebook is provided in the Appendix.

The second limitation concerns work being done by the ACRL Politics, Policy, and International Relations Section (PPIRS) at the same time as the researcher completed this project. PPIRS updated its information literacy and research competencies to serve as a companion document to the ACRL Framework. The researcher believes that this study and the PPIRS committee's work are complementary and that the categorization of the syllabi SLOs under the ACRL Framework will still be valid. PPIRS librarians may wish to combine the section's information literacy and research competencies with these data methods to conduct discipline maps and establish a community of practice.

Further research could also revisit the syllabi to see what references faculty provide for course assignments and whether assignment descriptions in syllabi provide insights on how information literacy is taught in the courses. These reviews could also track whether the faculty mention library resources, library instruction in course schedules, or librarian consultations. The existing matrix could be adapted to provide additional columns, or a new matrix could be created. Qualitative data from the department could also prove useful to the study. A survey, interview, or focus group could be conducted with faculty to get their views on how information literacy concepts are taught in their classrooms. A similar survey, interview, or focus group could be established for students. These qualitative data would require Institutional Review Board approval and would provide valuable insights into how information literacy is addressed through course assignments and class participation. These methods could increase opportunities for discussion and partnership between librarians and other academic departments.

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Appendix

Codebook

This appendix contains samples from the codebook developed for this curriculum mapping project. The SLOs presented were written by faculty in the Department of Political Science at the University of North Texas and copied directly from their syllabi into the codebook. The faculty's syllabi were collected from the UNT Faculty Information System.

ACRL Framework for Information Literacy for Higher Education

Authority Is Constructed and Contextual (AC)

In this course, students

- Design empirical research projects.
- Articulate policy arguments for or against governmental infringement into individual rights.
- Shepardize and cite cases.
- Engage in analogical reasoning and employ other tools of legal analysis.
- Explain the theoretical basis of women's political interests and consider how the intersections of gender, race, ethnicity, class, sexuality, ideological, and partisan identifications shape and create multiple perspectives on those interests.
- Learn what Socrates meant by "Know Thyself," that is, liberating your heart and mind from the compelling pressure of authoritative conventions.

AAC&U Information Literacy Value Rubric

Determine the Extent of Information Needed (DE)

In this course, students

- Formulate research questions and hypotheses.
- Design a research project involving data analysis.
- Understand the necessary components of a research paper.

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