From Mapping to Menus to Modules: A Comprehensive Instructional Services Assessment Leads to Changes in Library Instruction and the University Curriculum

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Purpose and Goals

Assessment of instructional services is growing into maturity as an area of expected activity across academic libraries. At the Illinois Institute of Technology (IIT), located on the south side of Chicago, Illinois, a STEM and technology focus permeates the curriculum. IIT is a private not-for-profit, mid-sized, research intensive, doctoral-granting institution with approximately 7,000 FTE students, split roughly evenly between undergraduate and graduate/professional programs. Our designated librarian liaisons to various academic departments have sometimes encountered resistance or indifference when approaching faculty for library instructional services. At the Paul V. Galvin Library, which serves as the main library, we wanted to strive toward not only an understanding of individual librarians' paths to success regarding the opportunities offered by the Information Literacy Framework, we also wanted to better understand the possible areas for learning interventions throughout each program at the university. Information literacy was not officially recognized nor were the skills explicitly found anywhere in the curriculum at our institution, and our value proposition for library instruction sessions largely centered on increasing students' searching efficacy. We needed a comprehensive and structural effort to change what we did and where we were allowed to do it, so that we could better serve the learning outcomes for our students.

Despite various outreach efforts, the instruction program had difficulty getting faculty buy-in outside of certain programs. Inroads were being made in certain departments like psychology and the business school, but the "library champions" model, wherein librarians would look for friendly instructors to collaborate with and provide some type of library instruction, had definite disadvantages. The authors sought a method to gather data to inform how we would strategically think about the future of our instruction program. We had been influenced by Oakleaf's contention that academic libraries should map all intersections as a foundational idea for approaching our comprehensive assessment of instructional services,[1] and we had encountered multiple presentations regarding curriculum mapping and information literacy. We were also hearing that when information literacy outcomes were added to outreach to instructors, expectations became complicated by confusion with research skills and basic orientations. Instructors began to expect librarians to be able to cover all possible skills and outcomes in a single session, often in less than an hour. At the same time, librarian representatives attending faculty governance and cross campus Student Affairs meetings kept encountering complaints about students' ability to find, use, and properly cite sources. And concerningly, we also discovered that our librarians had largely not utilized ACRL's Framework for Information Literacy, announced in 2016, or the new framework toolkit, launched in 2017.

We set the following goals for this project:

1. Update librarians' understanding of undergraduate courses, syllabi, and assignments in order to identify gaps in our instructional services

2. Identify which courses have an information literacy/research component

3. Identify which courses already receive library sessions

4. Integrate library sessions into more appropriate undergraduate courses

The very process of creating a curriculum map identified oversights and opened immediate new possibilities for action, as well as guiding and informing our efforts as we strive towards creating an information literacy program.

Introduction and Background

The authors, in their very first conversation as the newly appointed associate dean of assessment and scholarly services and head of research and international library services, identified better understanding of the campus curricular landscape as their first goal. Librarian liaison duties to academic departments had been formalized in an addendum in 2014 that included instruction as a specific expectation, as well as serving as a conduit of information between the library and academic units and departments. In the fall of 2017, we led our library liaison team in a process of curriculum mapping, wherein we gathered and reviewed syllabi from across the campus to identify learning objectives, assignments, and resources used. This included a literature review on curriculum mapping and other assessments of instructional services. Although we encountered some significant challenges, we also found some immediate, actionable insights. We began to craft and categorize the data gathered in January of 2018, but we continued to receive further syllabi until the following fall, which is when we did our initial analysis. This process provided opportunities for a comprehensive assessment of instructional needs on campus, adjusting in-class activities and assessment instruments, changing outreach strategies, and identifying our librarians' needs for instruction support. Also during this time, the head of research and international library services held a weekly workshop series for the Instruction Team to engage with the framework. These opportunities allowed us to work through the shift afforded by the framework, create an instruction toolkit, and change our more generic offerings into an instruction menu, which articulated what we would be able to provide to campus partners.

There were a number of initial guiding ideas from library and information science literature and presentations that helped inspire and shape our thinking. Notably, Van Scoy and Oakleaf's article on curriculum integrated instruction, and the utility of syllabus studies. Their observation that we must "...focus on outcomes the students must achieve to be successful" was influential upon our thinking for this project.[2] We utilized Buchanan, Webb, Houk, and Tingelstad's definition that "curriculum mapping is a process for evaluating the various components of a curriculum for cohesiveness, proper sequencing, and goal achievement..." and agreed with their contention that the process would help us clearly articulate our intended outcomes.[3] We later found Falcone and McCartin's guide for developing student learning outcomes using the Framework for Information Literacy particularly helpful.[4]

Alcock and Rose's development of Boss and Drabinski's five questions for syllabi analysis helped to frame the way we thought about the component parts in our mapping project, even though we ended up going with something a bit simpler.[5] Specifically, Wilhelm and Vaalor's research questions about how frequently and in what context the library was mentioned, and what projects represented possible opportunities for engagement, was closer to our own research goals.[6]

Smith, Doversberger, Ladwig, Parker, and Pietraszewki proposed a rating system for syllabi analysis to assess levels of library integration and were able to use this framework to demonstrate a statistically significant relationship between required library use and class level, as well as showing that requirements for library use differ across the disciplines. They also found that STEM and technology courses tended to require a lower level of library use, which affirmed our local experience as well.[7] Although our library purchases one copy of a textbook for every undergraduate course and thereby has some sort of minimal claim to integration within the curriculum, our Instruction Team was stymied on where to concentrate our efforts at outreach before this mapping project. And finally, when we later explored annotated

bibliographies as a possible measure for assessing learning outcomes, we found that Flaspohler, Rux, and Flaspohler's article, "The Annotated Bibliography and Citation Behavior" contained an excellent discussion of how use annotated bibliography assignments to enhance undergraduate instruction.[8]

Project Planning Timeline

The inception of this project really developed at the 2017 Information Literacy Summit. Although the authors had encountered previous literature and presentations on the topic,[9] Starkey and Piacentine's presentation on their curriculum mapping project provided a leaner, more agile model that we felt we could implement.[10] In October 2017 the authors created a plan. The first steps were an immediate review of library instruction learning outcomes, initial gathering of information, bulletins, and of course, the creation of spreadsheets. In November and December of 2017, we had achieved a comprehensive email outreach and follow-up from all library liaisons. By January 2018, we were ready for the initial data entry. In the spring of 2018 we were able to use collections conversations with academic departments to spur further engagement and submissions. We decided in the summer that it would be worthwhile to launch another round of calls for participation, and in September 2018 we put out a final call and collection of syllabi. Immediately following this collection we began our initial analysis. This led to a presentation at the Undergraduate Studies Committee meeting as well as conversations regarding information literacy with the provost in the spring semester of 2019. Notably, our intuition regarding integrating information literacy into the curriculum through embedding sessions into courses rather than creating a separate for-credit course was confirmed when the provost directly asked the dean of libraries to pursue the former course of action. By August 2019, we had created the instruction menu to address some of the issues raised earlier in the process. In November 2019 the initial discussions with the Humanities Department led to the piloting of a HUM 200 module, and we began implementation planning the next month. We were able to launch a January 2020 module pilot. We then created a report for the Humanities Department, the dean of the Lewis College of Human Sciences, and the provost based on our end of the semester assessment, and as a result, we saw an expansion of the pilot in fall 2020. Although the adjustments necessitated from COVID-19 pandemic slowed the implementation, by the end of the spring 2021 semester, a library-taught information literacy module will be mandated for all HUM 200 classes.

Mapping Process

As a first step to evaluation, we determined the project scope and desired data points. After reviewing all academic degree programs, we decided to focus on courses required for all 47 undergraduate majors offered in 2017–2018. Each academic program has an assigned subject liaison to offer research and instruction services for their academic departments. They were all tasked with mapping courses in their assigned major(s). Although there were ten subject liaisons in total, some were assigned to one major, while others were assigned to multiple majors. Some collegial follow-up conversations were necessary to clarify the projects' scope and goals.

On shared google spreadsheets, we started by building a list of 100–500 level courses required for each major during the 2017–2018 academic year by gathering information from the academic catalog in the undergraduate bulletin. Independent studies were not included. For each course, we asked the following questions:

1. Which degree programs require this course?

2. What are the prerequisite(s)?

3. Does it have a research assignment or research component? What is the assignment?

4. What are the required information literacy skills?

5. What resources or supplemental texts/readings were needed?

6. When was a library session last offered?

7. What were the library instruction session learning outcomes? Which are the related ACRL Frames?

The next step was to gather data and information. We gathered all courses' names, numbers and prerequisites from the academic catalog, which provides a good overview of each undergraduate degree program, program requirements, brief course descriptions and sample curriculum tracks. However, it didn't contain any detailed information of course learning outcomes or whether the course has research assignments. To collect more information, subject liaisons distributed an email request to their academic department chairs and the departmental office assistants asking for copies of their course syllabi to help inform our own landscape analysis of our instructional services. We also reached out to the Registrar and the Office of Digital Learning to pull syllabi from Blackboard, with mixed results. We encountered some significant challenges and delays when collecting syllabi, but some of the contacts responded and sent us their syllabi. We started exploring other methods to collect syllabi. We found one program listed all their course information on their website, including course syllabi. In all, 260 syllabi were collected and saved in the shared Google Instruction Team Drive. We eliminated all graduate courses and selected all 207 undergraduate courses. Table 1 shows the distribution of undergraduate course syllabi received across the various disciplines:

Table 1. Distribution of Syllabi Received across Disciplines *(N=207)*

Discipline	Percent
Humanities	3%
Communication	5%
Philosophy	2%
Literature	2%
History	3%
Art and Architectural History	2%
Psychology	5%
Social Sciences	1%
Physics	13%
Math	20%
Civil, Architectural and Environmental Engineering	10%
Environmental Engineering	1%
Industrial Technology and Management	14%
Computer Science	9%

Discipline	Percent
Business	5%
Economics	2%

After gathering the syllabi, liaisons were assigned to review the course syllabus of their subject areas. Specifically, we looked for information for the following questions:

- Are there any research assignments? What are those assignments?
- What Information Literacy skills are required for the research assignment?
- What are the course learning outcomes?
- What resources or supplemental texts/readings are needed?

To find out which courses already had library instruction sessions and any library session learning outcomes, we gathered library instruction statistics from LibInsight. LibInsight is a data analytic tool which we use to record and analyze instruction sessions transactions, workshops and events, research appointments, and reference transactions. Data recorded for the course specific instruction sessions include the course name, instructors, session date, learning objectives, librarian(s), number of students, whether it was a one-shot instruction session, and other relevant information. All liaisons have access to add, edit and collect the instruction transaction data of their own instruction sessions. Since we were continuing to receive further syllabi until the fall of 2018, we then scoped our study and began our initial analysis (Figure 1).

Figure 1

Results

We found a variety of intriguing results, from the somewhat expected findings that there was no clear home for information literacy in the curriculum and that there was a dearth of undergraduate interaction with databases or research literature within some programs, to the unexpected discovery of certain academic programs. We also found there were drawbacks to the on-demand one-shot model we then had. In addition to some students not having encountered library instruction sessions, or having had them multiple times, the content covered may not match sequentially or appropriately to the needs of the students. The curriculum mapping exercise, as well as the internal and external conversations that accompanied it, provided multiple opportunities for evaluative adaptation, and implementing,

communicating, and assessing further changes. Changes included in-class activities, formative assessments, and the way we not only approached, but what we offered to, faculty.

As we predicted, the findings indicated information literacy skills were not included in all of the writing and communication Core Curriculum courses. Each undergraduate student is required to take the Core Curriculum (CC) courses, which are writing and communication courses, humanities 200-level courses, human science modules, STEM module and collaborative interdisciplinary and/or professional experience courses. To pass the writing and communication requirement, students must take HUM 200 and COM 101 courses. HUM 200 is the prerequisite course for some of the 300- or 400-level humanities or human sciences courses. They are all taught by adjunct professors and are mostly taken by first year and second year students. We found only half of the HUM 200 courses explicitly contained research or information literacy components. Information literacy is built in the COM 101 curriculum, but COM 101 is only required for the students who do not meet the basic writing proficiency requirement. As not all students need to take COM 101, this confirmed that many students left the CC writing and communication courses with no exposure to information literacy skills or library resources.

Only a few CC courses in the human sciences modules have research components. However, they are not required for the first semester or first year. In fact, we found the required courses were not necessarily prerequisites for other courses, and it was difficult to determine a consistent progression through an academic program that students take. Students can take an entry level human science CC course during their last semester, and may not encounter any information literacy skills education in their first or second year.

The initial results from reviewing the syllabi suggest that the subject discipline of the course affects the research components required. Humanities, social or behavioral sciences courses were the ones that most often include research assignments. Only 400-level courses have research assignments in most STEM majors. Among the courses with research assignments, very few syllabi mentioned using the library resources or contacting librarians for research assistance. However, syllabi provide limited information as not all syllabi include assignment content or methodology. It was difficult to find the types of assignments required, or specificity about the research required. The syllabus format and content varied among different colleges and programs. Courses descriptions and learning outcomes often lack details. With limited course assignment information, it was difficult to find whether the research skills required increased with the level of the courses.

The collected data showed some 100–300 Level courses in the human sciences majors had library instruction sessions. The majority of the STEM majors courses didn't have library sessions except in a few 100-level Introduction courses. Among CC courses, only COM 101, a few human science modules, and ITP courses received library instruction. When comparing the courses with syllabi to our records of instruction activities, we discovered that among courses with research components, only a few classes had received library instruction. We also found that the majority of library instruction sessions were one-shot in-person sessions, which had similar learning outcomes for all level courses. If students had more than one library session, they may have been taught the same skills repeatedly in different courses. Finally, when reviewing library sessions' learning outcomes, we found that an information literacy plan was missing to guide and support librarian teaching. We found we were offering both information literacy sessions and how-to-use library tools types of instruction sessions for courses with similar research assignments. Not all librarians were engaging with ACRL Framework for Information Literacy for Higher Education, as the Framework was not required nor utilized for our teaching.

Discussion

The curriculum mapping process updated our understanding of the undergraduate curriculum and made us aware of new courses and programs offered in each college. We discovered that some programs and courses were no longer offered and found a few new academic programs for undergraduate students. The mapping process also allowed us to identify gaps in the core curriculum and identify courses to integrate information literacy instruction. As we sought to identify a structure for our library orientation, instruction, and information literacy instruction, we began to seek to identify one or two courses where all students would encounter not just subject-specific use of library resources and tools, but actual critical thinking skills related to the framework. Three specific types of courses for intervention points rose to the top for consideration: Introduction to the Profession (ITP), Interprofessional Projections Program (IPRO), and Humanities 200-level courses. The ITPs, which at many schools would be equal to a sociology 100-type course, were a good intervention point for library resources and tools instruction, but not every program's ITP had assignments or outcomes that related well to information literacy. The IPRO courses were also identified as a point of intervention, and we indeed piloted a couple of different modules in those courses during the fall of 2018, particularly in the IPRO 397 class which was focused on researching a specific problem or need. This was ultimately decided against: (1) we came to understand the 397 class was optional and many students were only taking the IPRO 497, which was focused on creating solutions, and (2) the program was undergoing a series of dramatic shifts and would not be a reliable spot for integrating information literacy sessions. Finally, that led us to decide on HUM 200 classes as a good point of intervention as they were both required for all undergraduates and were supposed to contain learning outcomes similar to English 100/writing and composition classes at other institutions. These classes were almost entirely taught by adjuncts, so the lack of standardization of learning outcomes was evident in the syllabi and provided an additional challenge.

In collaboration with the Humanities Department, we launched a pilot program that embedded information literacy in the HUM 200 classes in the spring 2020 semester. The pilot program was taught in five of eight sections of the class. Each class had two library sessions, which covered introduction to database searching, evaluating sources for credibility, using information ethically, and other basic information literacy skills. The two-session module gave us more time for discussion and classroom activities. Students were required to write an annotated bibliography after the library sessions which were graded by the librarians. The pilot program identified and addressed gaps in students' knowledge and demonstrated how an expanded information literacy instruction program can improve their skills. The alignment between the gains demonstrated in the pre- and post-test assessments with student feedback underlined the need for increased attention to basic information literacy skills, including basic Boolean search skills, recognizing credible sources, and identifying source types. The annotated bibliography assignment helped illuminate and address issues with plagiarism, citing sources, and writing. The positive feedback from instructors involved in the pilot helps bolster our recommendation that the information literacy module be expanded to all HUM200 courses for the 2020–2021 academic year.

We also started reaching out to all 18 ITP courses beginning in the fall 2019 semester. Though most ITP courses don't have research components, we were invited to seven of them, including a few academic programs that we had never collaborated with in the past. Most sessions focused on basic library introductions rather than detailed information literacy skills.

In addition to the CC courses outreach, we were able to identify potential courses with research assignments to collaborate with. Librarians proactively reached out to courses with research assignments in the beginning of each semester and invited them to schedule library sessions for their class, rather than waiting for instruction requests. We noticed that the best time to contact professors is during the two weeks before the semester starts, as many professors were finalizing their syllabi during those days. This increased our chances of being invited to their class and be added to their class schedule rather than

contacting them later or even earlier in the year. This approach helped us receive more faculty responses than ever before. A few faculty commented "perfect timing" in their replies.

Reviewing the library instructional data and learning outcomes turned up many opportunities for us to grow and strengthen our teaching. This includes implementing the ACRL Information Literacy Framework for Higher Education, developing an instruction menu, and creating an instruction toolkit for liaisons. When analyzing the library statistics and waiting for syllabi, the Instruction Team had a weekly workshop/training to discuss our experience and perceptions of the Framework for Information Literacy, and looked for ways to implement the framework in our teaching. Working together with a few subject liaisons who often do instruction, the Instruction Team developed an instruction menu for faculty to request library instruction. It has the starter package with foundational information literacy skills, the upper class level package with advanced research skills, and other topics. There are detailed learning objectives under each information literacy topic and instructional time. Faculty can select a package or customize their own session when requesting a library session. The detailed menu helps them see what information literacy skills librarians teach and what we can do to help their students. In addition, to support librarian teaching, we created an instruction toolkit with recommended tools and resources to help liaison plan library instruction, including suggested slides, classroom activities, and instructional tools, etc.

Practical Implications

Two of the biggest practical benefits we found during this multi-year endeavor included creating opportunities for "action research" and adjusting implementation and outreach mechanisms, and having decision-makers at the university level be informed by data. We presented our curricular mapping findings to the University Faculty Council's Library Committee and Undergraduate Studies Committee. We laid further groundwork with conversations with the provost and Humanities Department chair regarding information literacy, which paid dividends when the provost began to openly discuss seeking improvements for students' communication and information literacy abilities.

Although increasing demand for our instructional services was something of a secondary goal, we did see some immediate success there. Our "presentation to groups" statistics have risen steadily since we began this project. In just two years we saw a rise from 78 such sessions in 2016–2017 academic year to 124 (2017–2018) to 163 (2018–2019). A closer look at the Galvin Library's recorded statistics for each fall semester, the period of our most intensive initial outreach to faculty, showed significant activity increases as well. This was reflected across the board in fall-only activity statistics for course-specific instruction, research consultations, and reference questions. Instruction in the fall 2017 semester increased slightly (by 2 sessions, or 6%) from fall 2016, and the following year instruction nearly doubled (by 94%, 66 total sessions). Research consultations, a relatively new service in the fall of 2016, doubled in fall 2017 (from 8 to 16 total), and increased again in fall 2018 (to a total of 21). And from fall 2016 levels, we saw reference questions increase 28% in fall 2017 (from 560 to 714) and then increase 41% (to 794) in fall 2018.

Not only were we able to more than double the number of instruction sessions within two years, we were able to provide the university's senior leadership data-informed arguments for embedding information literacy within the curriculum. Practically for ourselves, we were able to create a support structure for librarians to grapple with implementing the framework, create a toolkit, and a public-facing instructional services menu. This menu helped not only the instruction team and library administrators to have something specific to point to when discussing instruction across campus, but also to manage faculty expectations of what liaison librarians could accomplish in a single one-shot session.

Conclusion

We presented our findings and our proposals for changes to the incipient campus Teaching and Learning Center, the University Faculty Council, the Undergraduate Studies Committee. This helped position us for a collaboration with our provost, in coordination with deans and chairs, to create an information literacy two-part module to embed in a composition class, which we piloted in the spring of 2020 and are planning to officially embed into the curriculum, via HUM200 classes, this year. This has necessitated a new approach to assessing existing student skills as well as student learning outcomes, and we have created a pre-test and post-test along with an annotated bibliography as assessment artifacts for the module. We believe that there are significant opportunities for libraries in creating conversations across campus through a curriculum mapping project. This comprehensive assessment process ended up with a much slower timeline than anticipated, but it has provided both visibility and substantive improvements in our instructional offerings at the individual, programmatic, and university-wide levels.

Using a curriculum mapping process, we updated our own understanding of undergraduate courses, syllabi, and assignments and immediately identified several key gaps in our knowledge of programs and courses. We identified courses that had an information literacy/research component, and review which courses already received library sessions As a result of our work, we were not only able to integrate library sessions into more undergraduate courses, but we were able to shift the bulk of our instruction from introductory and remedial courses to courses throughout the curriculum. Additionally, we were able to support our colleagues in shifting our learning outcomes to reflect the framework and create an instruction toolkit for them to use. Although we were not able to measure a precise response rate increase from faculty by contacting in a 7–14 day window before the first day of class, this could certainly be a future area of study.

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Endnotes

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