Multi-Method Assessment to Improve Library Instruction

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Introduction

Improving students' information literacy skills[1] has long been a significant part of academic libraries' core mission, tying them directly to the fundamental educational mission of their institutions.

It is not surprising, then, that academic libraries invest a lot of time and effort into instruction, both collectively and individually. In 2013–2014, for instance, 122 member libraries of the Association of Research Libraries (ARL) reported 140,510 library presentations to groups, 119,148 of which were held at 114 academic libraries in the US and Canada.[2] Even accounting for other types of presentations, variations in reporting, human error, or other ambiguities of interpretation, it is reasonable to assume that about 100,000 of those presentations were *bona fide* library instruction sessions. Assuming an average length of an hour per session, and a very conservatively estimated preparation time of two hours per session, the ARL community spent an estimated 300,000 hours or the equivalent of 7,500 workweeks on library instruction in 2013–2014. Averaged out over the 114 academic ARL members that reported in this category, the average library taught 877 sessions and spent 2,632 hours or 66 workweeks on these classes.

Much more precise calculations can be performed for individual institutions, including the total number of hours each instructor spent either teaching or preparing for a class, if the number of instructors is known. At Cornell University Library, for instance, in 2014–2015 we recorded 1,098 instruction sessions. Using the same estimate of 1 hour of class time and 2 hours of preparation time per session, we spent 3,294 hours either teaching or preparing to teach. With a high estimate of 50 librarians whose assignments included instruction among many other responsibilities for that particular year, each instructor spent around 66 hours that year on instruction. Clearly, library instruction is a major area of resource investment both at our institution and in the ARL community as a whole.

Given the amount of effort invested in library instruction, it is understandable that the profession has long emphasized both guiding and assessing these efforts. The *Information Literacy Competency Standards for Higher Education*,[3] approved by the Board of Directors of the Association of College & Research Libraries (ACRL) in 2000, have guided library instruction efforts for 16 years. These standards define information literacy as a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information." It was only in June 2016 that the ACRL's Board of Directors rescinded the standards, having adopted the much broader *Framework for Information Literacy for Higher Education* in January 2016.[4] The latter focuses on information literacy through six "frames": authority is constructed and is contextual, information creation is a process, information has value, research as inquiry, scholarship as conversation, and searching as strategic conversation.

The question of assessing library instruction is pertinent to both the standards and the framework, although the methodologies are somewhat complicated. For a long time (and perhaps still to some extent), library instruction evaluation depended primarily on the use of input measures. However, in recent years, outcomes-based assessment has heavily influenced the library instruction community. Elaborating meaningful outcomes-based assessment measures for the six frames is arguably harder than for the earlier standards, as the skills associated with the frames are more dependent on and influenced by the whole educational experience of the student and not just library instruction.

Input measures are the easiest to collect and compare, of course: e.g., number of sessions and number of participants over time, possibly benchmarked against other institutions. Although input measures are relationally useful (how are we

doing compared to past periods or to our peers?), there has been a lot of interest in developing outcome measures for more meaningful evaluation. Reaccreditation guidelines in higher education have advanced practices of learning outcomes assessment, so measuring student skills against learning goals has become more widespread. It is relatively easy to develop outcomes-based assessment for the ACRL standards for information literacy competency by measuring the degree to which the students are able to meet the learning goals of locating, evaluating, and effectively using information pre- and post-library instruction. This kind of outcomes-based assessment of library instruction is universally accepted theoretically, even if not yet practiced everywhere. Creating an outcomes-based assessment methodology and constructing relevant instruments to measure whether students have mastered and can transfer knowledge related to the six information literacy frames will probably take longer and may very well reach the impasse that seems to define the current debate around correlating library instruction (or use of the library in general) to student learning outcomes.[5] All of the frames go well beyond library instruction and, in that sense, it would be difficult to argue for any correlation, much less causation, between library instruction and critical thinking development, for instance.

While useful learning outcomes-based assessment measures that are grounded in the *Framework for Information Literacy* are the aspirational goal, critical thinking, and especially growth in critical thinking over time, is notoriously difficult to assess. In the meantime, as an active participant in the process of higher education, the academic library is required to evaluate the success of library instruction, both for service improvement and resource allocation, or as a performance indicator for library instructors.

The evaluation can employ various formats and methodologies—from satisfaction surveys, through measuring learning goals achievement (or perception thereof) at the end of library instruction sessions, to anecdotal evidence, which can span the spectrum from repeat customers, to thank-you notes. Very often, these are all conducted or received immediately following an instruction session, which can impact the responses positively.

What happens if overall perceptions of helpfulness and value from the two most important stakeholders of library instruction—faculty and students—are collected long after a specific library instruction session in the broader context of an overall assessment of the library or the entire academic experience? What can we learn from such data and how can we use what we learn to improve our instructional offerings or rethink library instruction altogether? And how can we reconcile data that seem contradictory?

Below we describe a Cornell University Library project—a case study of triangulating from various data sources and using findings and further investigation to create and assess the success of a pilot project intended to improve the student experience, not just their skills.

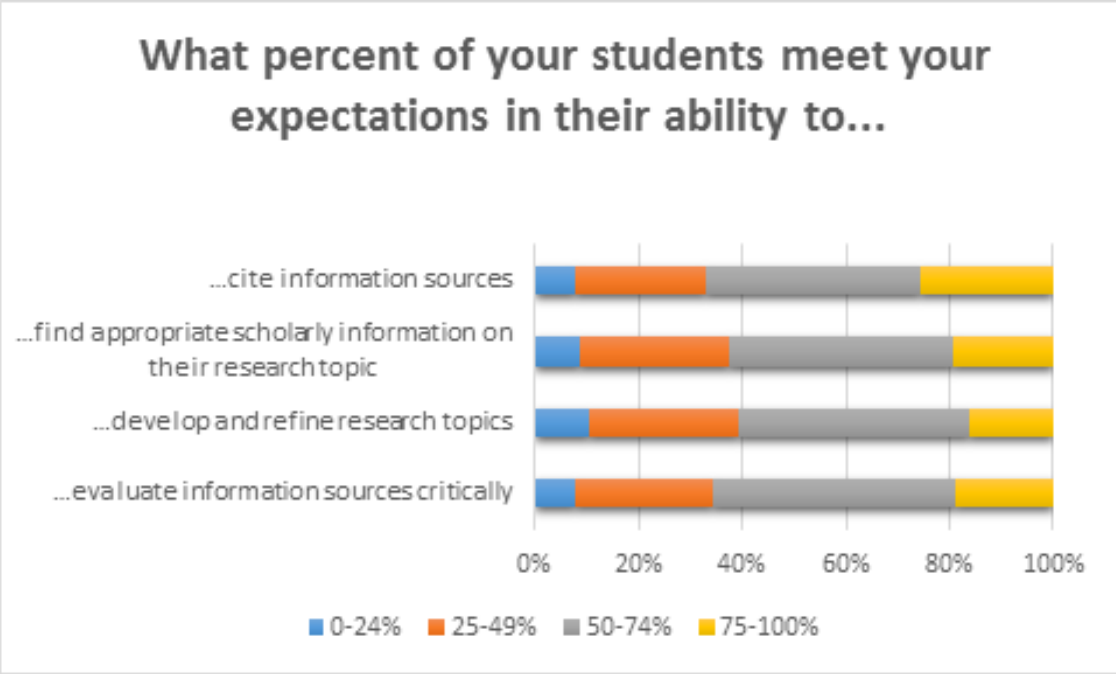
Faculty see student need and positive impact of library instruction

Cornell University Library conducted a locally designed census survey of its entire faculty in 2014 with an overall response rate of 46% (48% among tenured and tenure-track faculty).[6] The survey subjects answered questions about a wide range of topics including their perception of the information literacy skills of their students, their use and the perceived impact of library instruction, and, for those who do not use library instruction, the reasons for forgoing this service.

Faculty are less than satisfied with the information skills of their students. University-wide 33–39% of faculty said that fewer than half of their undergraduates meet their expectations when it comes to the following four major information literacy competencies:

- Citing sources, according to 33% of faculty
- Finding appropriate scholarly information on their research topic, according to 38% of faculty
- Developing and refining research topics, according to 39% of faculty
- Evaluating information sources critically, according to 35% of faculty (Figure 1)

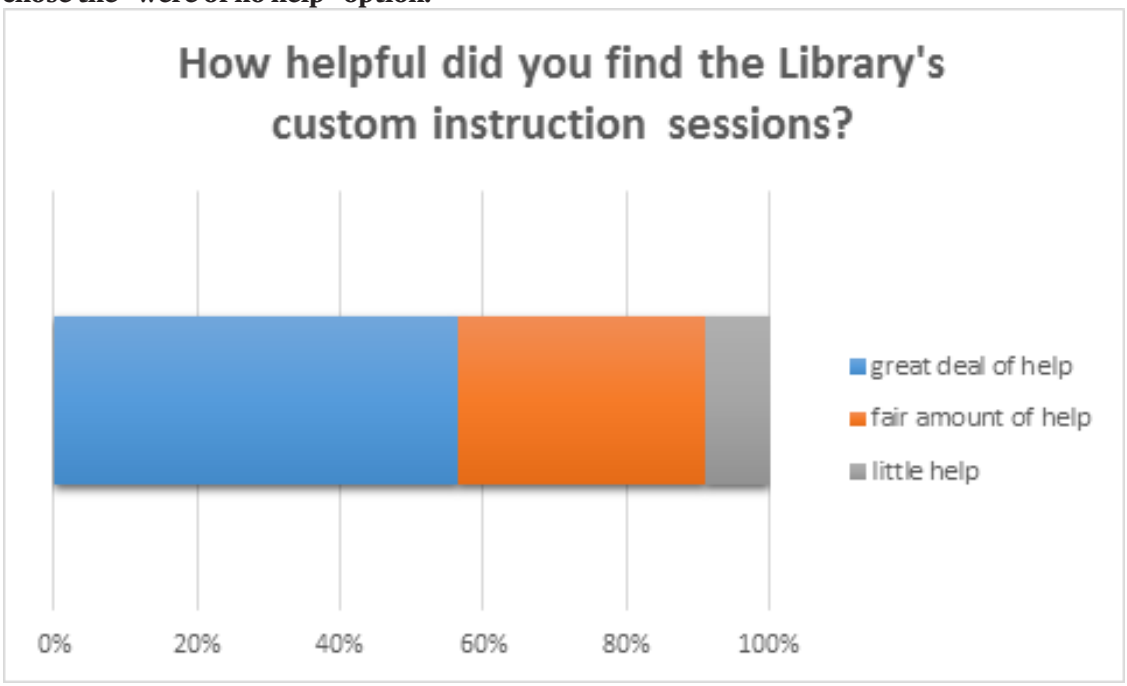
Figure 1: In 2014, 33–39% of Cornell faculty said that fewer than half of their undergraduate students meet their information literacy expectations.



On a more granular level, at some Cornell colleges and schools, the situation is even direr. For example, at one particular school, up to 73% of faculty found that fewer than half their students had these important skills.

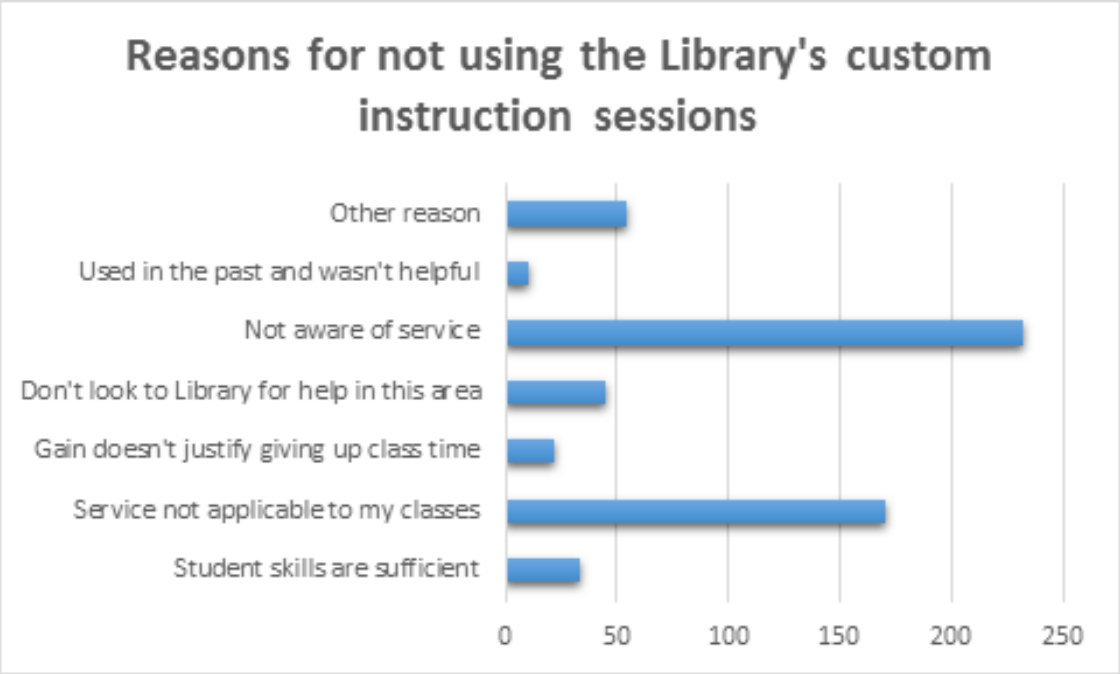
The next survey question asked about the use of library instruction sessions designed to help build these skills in students. Only 31% of respondents had used these services, while 69% had not. Of those who had worked with librarians in the classroom to build students' skills, 56% found that the sessions provided a great deal of help, 35% said they were a fair amount of help, and 9% found them to be of little help. Nobody responded that the sessions were not helpful. (Figure 2)

Figure 2: In 2014, Cornell faculty rated the helpfulness of library instruction sessions. No respondent chose the "were of no help" option.



The respondents who had not used library instruction were asked to identify all the relevant reasons why they had not made use of the service. Overall, the reason identified by most respondents, 41%, was lack of awareness of the service. In one school, this number was as high as 70%. The second reason, chosen by 30% of the faculty, was that these classes are not relevant to the specific classes taught. Eight percent do not look to the library for help in this area, 6% find student skills sufficient, 4% said the gain does not justify giving up class time, and 1% said they had tried using the service before but it was not helpful. Ten percent identified other reasons. (Figure 3)

Figure3: The most common reasons Cornell faculty did not use library instruction session in 2014 were lack of awareness and lack of applicability to their specific classes.

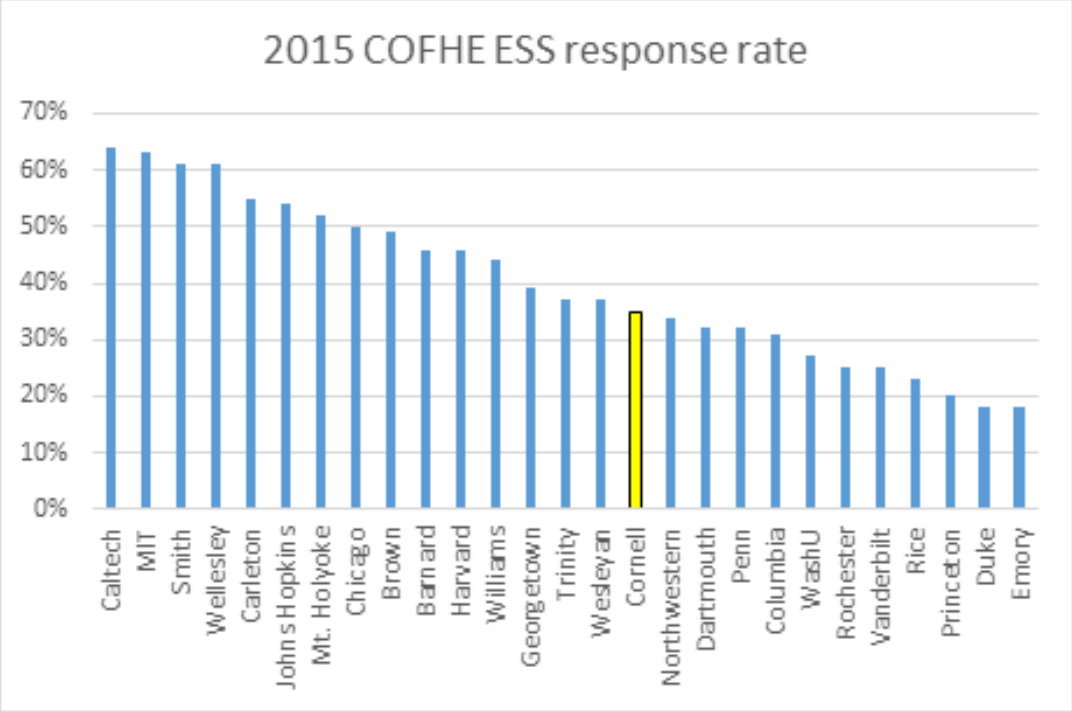


These survey results show that, overall, faculty see a need to improve information literacy skills in their undergraduates, that they find library instruction to be a helpful tool to build skills, and that the biggest obstacle to their using instruction is lack of awareness that it exists. By looking at this data by itself, we could conclude that, overall, our instruction program is quite successful; all we need to do is promote it more to those faculty who are not yet aware of its existence and value.

Many students do not find library instruction helpful

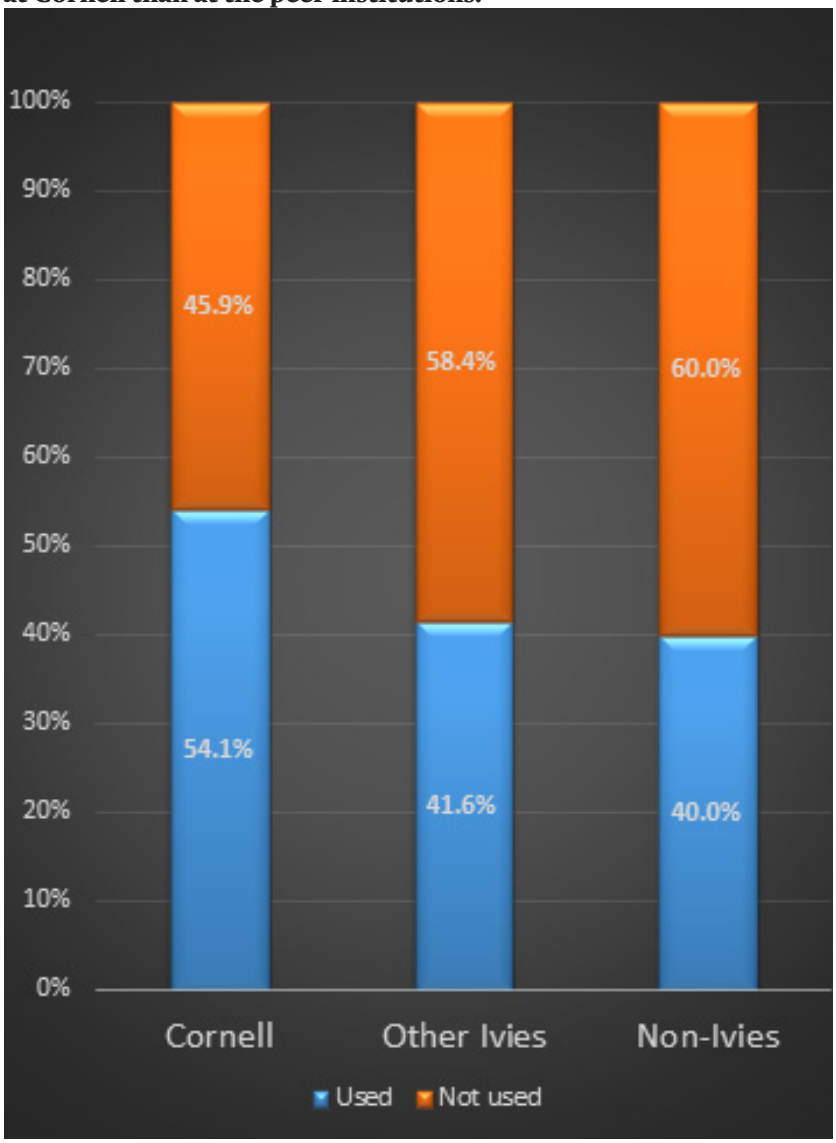
Faculty are obviously a major part of the educational equation, and so are students. Finding out how students feel about the helpfulness of library instruction was the next step in assessing the perception of the library instruction program by major stakeholders. Cornell identified the 2015 Consortium on Financing Higher Education (COFHE) Enrolled Student Survey (ESS) as a potentially useful vehicle to gauge undergraduate perception both at Cornell and at as many of the other COFHE schools as possible. With Cornell's leadership, a group of librarians from a handful of libraries approached COFHE and worked with them to formulate an optional panel of library-related questions that the participating universities and colleges could choose to add to the consortial core of the instrument. We also worked to alert the libraries at the COFHE institutions to the availability of this panel and encouraged them to talk to their institutional research offices if they wanted these questions asked. Out of the 34 universities and colleges that ran the survey that year, 29 (85%) ran questions from the new library module, and 27 (79%) chose formulations that were directly comparable. Figure 4 shows the participating institutions and their response rates.

Figure 4: Participating institutions and their response rates in the 2015 Consortium on Financing Higher Education (COFHE) Enrolled Student Survey ESS—universities and colleges that included the same question about the helpfulness of library instruction.



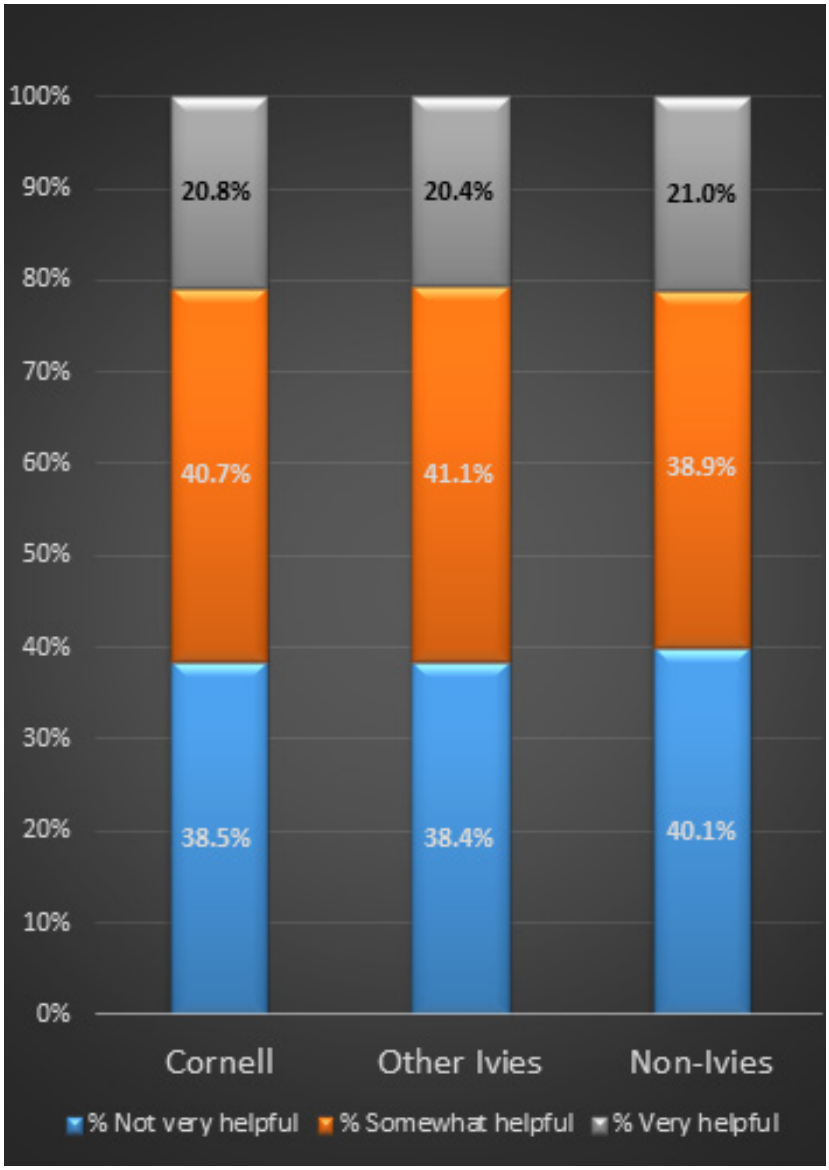
The survey question relevant to instruction was: During the current academic year, how helpful have library classes and presentations been to you? The possible answers were: not very helpful, somewhat helpful, very helpful, and didn't use. At Cornell, 54% of respondents reported having used library classes and presentations in the current academic year. This proportion was somewhat lower at the peer institutions: 42% at the other Ivy League institutions and 40% at the non-Ivies (the two normative categories that COFHE provided for our benchmarking analysis). (Figure 5)

Figure 5: The 2015 COFHE ESS survey shows a slightly higher rate of library instruction participation at Cornell than at the peer institutions.



While there were some differences between Cornell and the normative peer groups in rate of use, the perceived level of helpfulness of the classes and presentations was quite uniform: an astonishingly high 38–40% found them not very helpful, 39–41% rated them somewhat helpful, and only 20–21% said they were very helpful (Figure 6). The remarkable similarity of these results across the normative groups seems to indicate that these findings are valid for the current state of library instruction without major institutional differences.

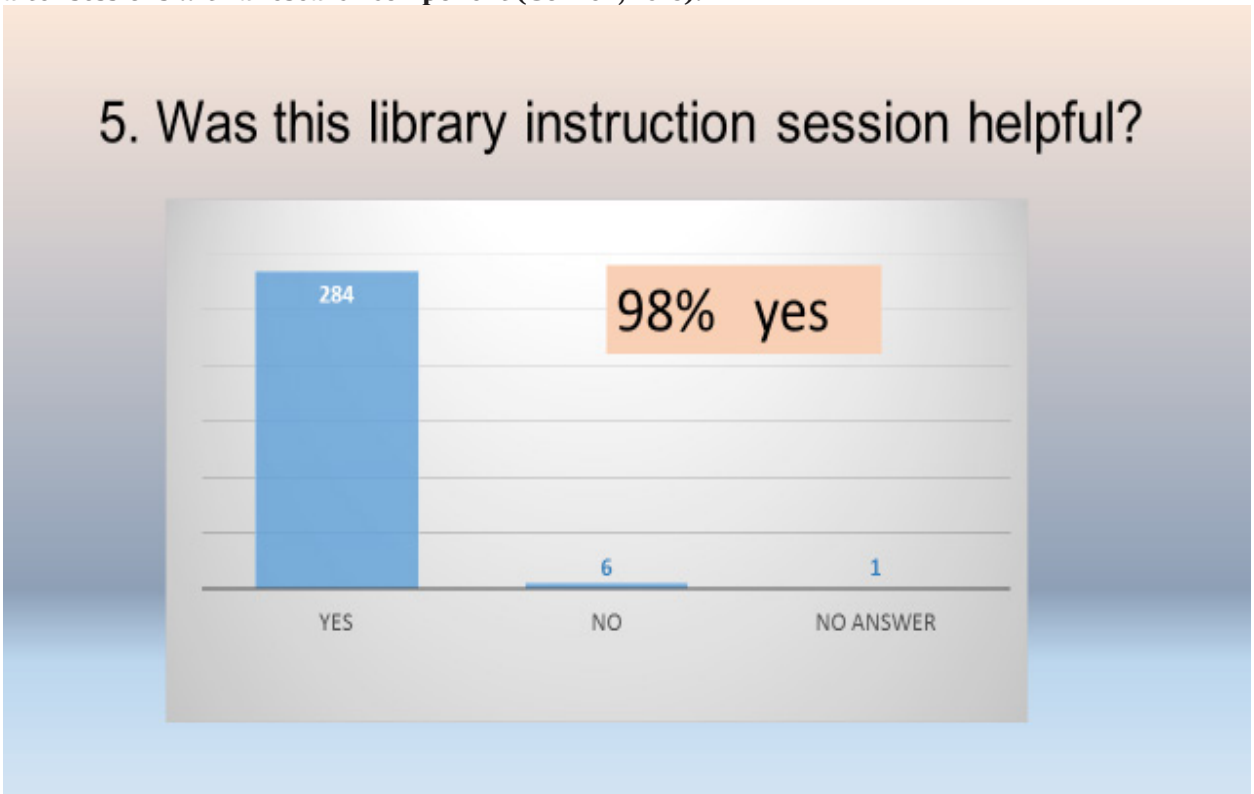
Figure 6: Students' perceptions of library instruction's helpfulness are shown to be uniformly low in the 2015 COFHE ESS.



These disappointing results came as a stark contrast to the positive view of the faculty. These results were also very different from numerous satisfaction surveys that we had conducted immediately following instruction sessions with the respective participants. For instance, a specially convened assessment task force worked on an instrument in the fall 2015 semester and recruited volunteer library instructors teaching classes with a specially designed research assignment to administer the survey at the end of their classes. Please note that only classes with research assignments were assessed, since one possible explanation of why the COFHE results were so disappointing was the fact that students were remembering various tours, general workshops, or general introductory sessions when they were rating the helpfulness of their overall experience. Whether this assumption is correct or not is immaterial since, with the 2015 assessment study, we wanted to test the hypothesis that the presence of research assignments in the class increases the (perceived) helpfulness of library instruction sessions.

There were 291 students who took the post-session survey and 98% of them rated the instruction as helpful (Figure 7):

Figure 7: Student perception of the helpfulness of library instruction sessions measured immediately after sessions with a research component (Cornell, 2015).



Student focus group shows issues with scaffolding

Even though the hypothesis of "presence of research assignment results in higher levels of satisfaction" might appear to have been confirmed by the results above, there still remained untested variables. Does time influence the memory of library instruction negatively? Does the presence of the instructor while the survey is administered impact students' perception of its helpfulness in a positive way?

In order to understand better what might be behind the contradictory results, we decided to use a self-selected student group, the standing Student Library Advisory Council (SLAC) and discuss the results with them. The students on SLAC are representative of the student population at Cornell in the sense that each college or school dean nominates two representatives to serve on the council. However, they are not a representative sample in that they have been nominated precisely because they are invested in the library and its engagement with the academic enterprise in one way or another. Their investment in the success of the library, as well as the fact that we already had experience working with the group (the university librarian and the associate university librarian for research and learning services meet with the group monthly) and were familiar with how vocal and frank with their concerns they could be, suggested to us that we would get useful feedback.

We presented the results of the faculty and student surveys and asked the members of SLAC to brainstorm reasons why such considerable differences in perceptions of helpfulness and value existed, as well as suggest ideas of how library instruction might be improved.

The reasons proposed as an explanation of the low ratings library instruction received on the COFHE survey included:

- Library instruction is forced
- Many students have gone through library instruction in high school
- Instruction is redundant: during their Cornell years, students experience "effectively the same presentation" multiple times
- Quality of instruction varies (it is often not engaging enough; instructors just "throw tools at you")

- Conceptually, library instruction is often too centered on fairly intuitive search engines, or it is too general

Asked about possible explanations of why at the end of library instruction sessions 98% of the students rated them helpful, while on the end-of-year ESS survey 38.5% of those who participated in library instruction found it not very helpful, the students offered various explanations: students forget what they learned, at the end of the session they feel bad if they do not rate positively, on the COFHE survey they were rating library instruction in relation to their overall academic experience, etc. Ultimately, the agreement coalesced around the perception that library instruction is too tool-based and is not teaching critical thinking.

The suggestions for improving it included:
- Replace instruction sessions with one-on-one sessions
- Turn instruction into a Q&A session
- Divide classes into smaller groups so that individual questions can be addressed

All of the suggestions clearly connected to the flipped classroom model where the content (or part of it) is delivered online and face-to-face interaction is reserved for customized help.

Pilot project

In order to address some of the points made by the members of the Student Library Advisory Council, especially those about redundancy and "experiencing effectively the same presentation," we decided to create a pilot project that emphasized customization, the flipped classroom, and specific assignments.

When we discussed the findings about the library's instruction program with the director of teaching excellence at Cornell's College of Engineering, she proposed a collaboration with two of the engineering courses that she was helping to redesign at the time. Tying in with the flipped classroom concept employed in the course redesign, the library produced a number of short instructional videos, each to develop a specific skill. All of the videos were of the "how-to" type: how to find high-impact articles; how to find authoritative, scholarly articles; how to find phase diagrams; how to find high-quality videos of experiments, etc. These videos were then embedded in the Blackboard syllabus to accompany specific assignments needing such skills for a truly on-demand, just-in-time instruction experience, where students who already have the appropriate skills can easily skip the items they do not need. This partnership made even more sense because, among all the Cornell colleges, the engineering faculty's evaluation of the usefulness of library instruction was one of the least positive. The pilot project targeted two fall 2015 engineering courses and produced a total of eight videos by two subject librarians. The length of the videos was between two and eight minutes. Two different methods were used for presentation. One used a split-screen method that showed the librarian, subtitles, and screen capture of the information resources being discussed. The other used only the screen capture with narration and subtitles. All videos were entitled "Ask a Librarian," followed by the content of the video posed as a question. The reasoning behind this approach was also to use this opportunity to brand the library and show students the kind of research help they can expect to get from a librarian.

Project evaluation and conclusion

We evaluated the video project in various ways. An indication of usage was the number of times the videos had been accessed along with the average viewing length. The logs revealed that the videos were viewed 701 times excluding views by the instructors, with an average length of 1–3 minutes. Of the 701 views, 220 show no time for the duration watched, which we surmise means that someone clicked on the link and then immediately closed it. There were 481 views that recorded time watched, with various lengths from 1.2 seconds to the full length. We are still not sure what to count as legitimate "views."

To put the numbers in perspective, the overall number of the students enrolled in the classes was around 150. One class had 100, the other had 50 students. The number of unique users for each video varied between 89 and 100 for the larger class and 26 and 43 for the smaller class. The two videos that were available for both classes ("Getting Access to Library Resources" and "How Do I Find High-Quality Lab Videos?") were accessed by 74 and 43 unique users, respectively.

A mid-term survey was administered to the students enrolled. When asked if the videos helped them complete the assignments, 79% replied yes.

The free-text comments varied from positive to critical. An example of a positive comment is: "I think your presentation is very good—and that is part of why I like it so much. The other part is that many professors expect you to know how to do research often without really teaching you." The critical comments focused on the content, not the form: "I found it to be poor advice to stick to PubMed and Web of Science compared to Google Scholar. Their main criticisms of Google Scholar actually have solutions on the GS page, they just didn't go over that."

The librarians who produced the content and were featured in the videos received some unsolicited feedback, which was overwhelmingly positive, as this one illustrates:

> I just wanted to drop you a quick line and say that I found some of the Panopto videos that you made very useful and informative. I am in a class for [Prof. X] [who] gave us some links to specific ones.
>
> I think you've done a great job of explaining things clearly and that the video format is a good way to create a resource that can keep on working that you can send people to rather than only dealing with questions one on one. So I wanted to say, that I thought they were really well done, and then also ask you if there is a way to access all of the ones you have made?
>
> [Prof. X] gave us links through Blackboard to about 5–7 videos but I didn't know if there was some central hub where I could see all the ones that have been made?

Finally, we used the same group of Student Library Advisory Council members to show these assignment-specific videos, and two other library online modules created previously—one on general library research, one on business research. We asked the students to rate the videos and then discuss their ratings. The newly created engineering videos were the highest-ranked because they were specific and short. They were also clearly preferred because of the newer technology used, e.g., captions, the ability to speed up or slow down, etc.

Next steps

What are the data-driven decisions about library instruction that we have made based on the triangulation of data?

In the absence of a required information literacy course at Cornell, and considering the demands on librarians' time, both from instruction and from other priorities, as well as the sentiment expressed by students that they get "basically the same presentation" in different classes, we have decided to focus on quality over quantity.

This translates into several points. First and foremost, our instruction efforts should be focused on classes with research assignments or components, which means that one big portion of our engagement—the teaching of freshmen writing seminars—may very well have to be contracted. If the writing class has no genuine research assignment, and since 98% of the students who had library instruction in connection with a research assignment found it helpful, then we should not be spending precious energy and resources on general sessions for classes with no research component. Another way to look at it is that it is imperative for library instructors to work with faculty to have library instruction be an intrinsic part of their syllabi, rather than an add-on or filler. This may very well mean that we teach upper-level classes more often than we teach freshmen writing seminars, or that we flip the freshmen writing seminar classes into essentially an upper-level research class by working with the instructor to create a research assignment. Undoubtedly, our numbers will go down, both in terms of number of sessions and participants reached, but if that translates into better-quality library instruction that students perceive as helpful and valuable, our efforts would have been well spent.

Second, we are focusing on teaching critical thinking skills, not on tool demonstration and explanation. This is where the ACRL *Framework for Information Literacy* comes in—we are not teaching students how to complete a particular assignment, but educating them about research. For instance, as important as citation guides might be, there is hardly a student (or a faculty member, for that matter), who, upon reading a citation guide, would exclaim, "This totally changed the way I am thinking about my research topic." With the profound changes that affect higher education, research, and teaching in the digital environment, how-to information is easier to capture

and process digitally than the elusive "a-ha moment." The valuable face-to-face interactions should be reserved for the "a-ha moments."

In practice, this means that everything that is procedural or composed of how-to information should be transitioned to online videos/tutorials, and classroom time should be reserved for unique help. Classroom time could take the form of one-on-one consultations on specific research projects or answering questions in a small group. This could also mean that librarians meet only with students who come with questions that have not been answered by tutorials because they are unique to their projects.

Our first step towards flipping the classroom for library instruction has been the creation of an online learning task force. This group is charged with creating videos and increasing staff proficiency so that instructors can easily create short videos on their own following best practices of communication and branding. This will free up time for face-to-face interactions that tackle unique problems and teach students not how to do research, but what research is.

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Endnotes

1. The Association of College & Research Libraries (ACRL) defined information literacy as the ability to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" in: Association of College & Research Libraries, *Information Literacy Competency Standards for Higher Education* (Chicago: ACRL, 2000), http://www.ala.org/acrl/sites/ala.org.acrl/files/content/standards/standards.pdf.

2. Martha Kyrillidou, Shaneka Morris, and Gary Roebuck, comps. and eds., "Personnel and Public Services: Summary Data," *ARL Statistics 2013–2014* (Washington, DC: Association of Research Libraries, 2015), http://publications.arl.org/ARL-Statistics-2013-2014/36.

3. ACRL, *Information Literacy Competency Standards*.

4. Association of College & Research Libraries, *Framework for Information Literacy for Higher Education* (Chicago: ACRL, 2015), http://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/infolit/Framework_ILHE.pdf.

5. For a very useful summary, see Megan Oakleaf, "The Library's Contribution to Student Learning: Inspirations and Aspirations," *C&RL* 76, no. 3 (March 2015): 353–358, http://crl.acrl.org/content/76/3/353.full.pdf+html.

6. The survey instrument, summary, and full results can be found on the Cornell University Library Assessment & Communication website at https://ac.library.cornell.edu/data#FacSurvey.