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INFORMATION LITERACY AND LIBERAL EDUCATION

From Google to Scholarly Sources

Information literacy is a fundamental literacy which underlies all other disciplines and is interdisciplinary in nature – much like a liberal education itself. In this chapter, students’ struggles with certain threshold concepts in information literacy are explored, with possible solutions. In today’s age of information overload and fake news, information literacy and the critical thinking that goes along with it is more important than ever for students to acquire, not only for academics but for life.

INTRODUCTION

The University of Lethbridge, located in Southern Alberta, Canada, was established in 1967 with Liberal Education as one of its founding principles. It has continued this emphasis throughout the years, and while attention to this principle waned in the early 2000s, by 2012 it was re-emphasised as a core value of the institution and has received a resurgence with the Liberal Education Revitalization project. The core team involved launched an awareness campaign to bring the fundamental values of a liberal education to the forefront of the institution, as well as revamping the class requirements within the program and expanding those classes to include offerings from a wider variety of faculties. Part of the Liberal Education Revitalization Team’s work was to create a new definitional document outlining four pillars of Liberal Education at the University of Lethbridge: breadth across disciplines; the ability to connect and integrate knowledge; critical thinking and problem solving skills; and civic engagement.

Liberal Education 1000 has been a core 13 week course in the stable of Liberal Education classes since Fall 2003, although earlier iterations of the class have been part of the curriculum since the mid-1990s. This class emphasizes knowledge across disciplines, is widely taken by students from a variety of subject areas, and is a

natural fit for a series of information literacy labs which have been included in the lab component of this class since Fall 2004.

In Fall 2015 a dual-credit version of Liberal Education 1000 for high-school students was piloted in which students completed 5 information literacy lab sessions dealing with the 6 Frames from the Framework for Information Literacy for Higher Education, adopted by the Association of College and Research Libraries (ACRL) in 2016. The Frames focus on core concepts of information literacy which function as threshold concepts (as originally defined by Meyer and Land, 2003) troublesome for most students to cross. These include *Authority is Constructed and Contextual*; *Information Creation as a Process*; *Information has Value*; *Research as Inquiry*; *Scholarship as Conversation*; and *Searching as Strategic Exploration*. These six Frames form an interconnected set of skills critical for students to adopt before becoming truly information literate.

At the end of the term, it was evident that the frame students struggled with the most was *Searching as Strategic Exploration*. In spite of specific instruction and practice in the use of academic databases and search strategies, most students reverted to familiar Google searching for their final research projects. As a result, the instructors involved wondered what the factors at play could be; whether this could be a potential threshold that students were having difficulty crossing, and what we could do to try to help them over it.

LITERATURE REVIEW

Previous researchers have studied students' preference for searching on the open web versus the library. They point to students preferring tools with which they are familiar and therefore find easier (Burgess, 2015; Purdy, 2012). They are usually satisfied with 'convenience searching' (Badke, 2014; Wiebe, 2015) and have anxiety and a lack of tolerance for ambiguity. Wiebe discovered students were "convenience searching... as opposed to really searching – digging, locating, uncovering, reading, evaluating, synthesizing, perhaps spinning off into an unexpected tangent and then recalibrating, asking for help, searching again in a different place" (2016, para 3). Wiebe also explicitly notes the connection between information literacy, liberal education, and lifelong learning – all linked to the critical thinking skills needed to evaluate information not just for academic purposes, but for life. In today's era of 'fake news', information literacy is a skill as critical to today's citizens as reading or writing. Critical thinking skills taught in a liberal education are mirrored in the evaluation skills needed to be information literate, and to live a successfully informed life. Badke (2012) and Georgas (2015) noted that students often have format confusion – online, everything looks like a web site, even if one is a journal article and the other an encyclopedia entry. Students don't have a mental picture of a traditional print journal, and don't have a clear conception of volumes and issues. They also don't understand the underlying processes that go into the various types of information outputs.

Likewise, the various search tools all seem similar in an online environment so the muddled world of scholarly communication is difficult for them to get a handle

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on (Badke, 2012). To them, what is the difference between a scholar's blog post versus her journal article? Between the pre-print of an article versus the 'official' PDF? How do we explain to them that although peer-review is held up to being a gold standard of scholarly publishing, that sometimes that too lacks credibility? Students need a mental picture of the entire scholarly communication process, and they need to have the critical thinking skills not to accept all information they find at face value.

A few studies (Booker, Dentlor, & Serenko, 2012; Dempsey & Jagman, 2016) mention both the need for self-efficacy in students, and the fact that many of them have both performance and library anxiety; Hannon (2016) mentions a lack of tolerance for ambiguity among many undergraduates, and how they need to understand the value of persistence.

INFORMATION LITERACY AND THRESHOLD CONCEPTS

Information literacy has become a crucial skill in the 21st century with the information explosion brought on in large part by the advent of the internet and our increasingly interconnected, technology-driven society. However, the need for increased information literacy was identified long before the advent of the internet; Paul Zurkowski is credited with coining the phrase information literacy in 1974, and even as the internet was in its infancy, Shapiro and Hughes noted its importance as a basic literacy and liberal art for functioning in our society:

information literacy should in fact be conceived more broadly as a new liberal art [...] as essential to the mental framework of the educated information-age citizen as the trivium of basic liberal arts (grammar, logic and rhetoric) was to the educated person in medieval society. (1996, para. 13).

Information literacy has been defined in many ways, but most educators and librarians would agree that it is a foundational set of skills and habits of mind that enable someone to find, evaluate, and use information ethically to address particular needs and to create new knowledge. It is a broad concept enabling people to use information effectively but also to think critically about the information enterprise and our information society. And in this society, it has become a basic literacy -- a foundational skill as much as reading literacy, numeracy, or other skills which underlie all disciplines and subject areas.

When the ACRL adopted the Framework for Information Literacy for Higher Education in 2015, it replaced an earlier set of standards which had been in place since 2000. In the new Framework, information literacy instruction focuses less on skill acquisition and more on helping students develop a broader, more critical understanding of information. Each of the six frames has associated knowledge practices and dispositions which lead students to acquire information literacy abilities and thinking processes, and are all closely related and interconnected. The linking of threshold concepts with information literacy was drawn largely from the work of Townsend, Brunetti, and Hofer (2011), who identified many concepts they

found were particularly difficult for students to grasp, on which the final six frames chosen were based.

Based on this new theoretical overview of information literacy, the librarian involved in the delivery of the library lab sessions for Liberal Education 1000 revised the information literacy labs that had historically been given as a part of that class to encompass the Frames as described by the ACRL. The Framework was a natural way to connect information literacy and liberal education concepts for the students. The labs consisted of a combination of lecture and hands-on or group activities. For the 'traditional' library skills such as searching the library catalogue and databases for books and articles, students watched short demonstration videos on search tools and techniques prior to class so more of the in-class time could be spent doing hands-on worksheets in the computer lab, with the librarian there for help and support. The worksheets included exercises on choosing a research question, picking keywords and synonyms, using Boolean to connect search terms, and comparing results from different sources such as our library's global search tool, *Summon*, the library catalogue, and a library database. The goal was to get students to understand the differences between the type of results they might get from each of these search tools, and why they might choose one over the other; they should also have understood how using these tools could make evaluation and focusing results easier than doing a general internet search. However, students' final assignments showed that their habit to 'just Google it' stuck – they used resources found on the open web as opposed to the scholarly sources they would have found using the library resources.

Of course, our question was, "Why?". Why would students, after being shown and practising using library resources, revert to their old habits? At the same time as the Dual-Credit course, another on-campus section of Liberal Education 1000 was being held in which the students had to submit reflective journal articles weekly on their library labs. Prior to collecting these assignments, we received ethics approval from the Human Subject Research Committee at the University of Lethbridge so we had permission to retain and anonymously analyse these entries. We had a close look at the comments in these journal entries from both a high-level perspective, as well as a closer analysis to determine any patterns in the students' own understanding. Our method was to anonymize the students' journals and then to read them informally, looking for indications of the threshold concepts in the writers' choices of words. Neither of us has expertise in the digital humanities or more formal text mining analytic methods and so our approach was perhaps more akin to that used by historians in examining documentary evidence with the aim of constructing explanations for past human actions and behaviour. We essentially treated the students' journals much like diaries, as records of their library lab experiences. We did not assume students would make explicit reference to threshold concepts. Instead, we looked for passages indicating that they felt they had gained knowledge they did not possess before, a different perspective, or new ways of doing things. We also looked for negative passages where students reported difficulty understanding concepts or resistance to adopting new methods.

After our review, we settled on three major attitudes that seemed to prevent students from crossing the threshold into using library resources:

- "I already know how to research!" – students don't cross the threshold because they don't think they need to.
- "Everything is a web site" – students don't cross the threshold because they don't understand the differences among information formats and search tools
- "Google is easy; databases are more confusing" – students don't cross because they think it's too hard to learn something new

On the first point, "I already know how to research," students' journals were positive overall in revealing that they had crossed some kind of threshold and gained new knowledge about research. "Now I know how to go deep into the university site and get different search tools I didn't know existed," wrote one. Another noted, "I used to make mistakes of writing papers in the past, jumping into writing on a topic until I realized the topic didn't have enough information to write about. I know now to be patient when it comes to writing research papers and to always pick a topic wisely after a lot of analysis and research." This student revealed new knowledge about searching techniques: "I did not know, however, the handy tricks used in a Boolean search, and have found this to be very helpful in getting better results. This week's lab has shown me that it is OK to re-start a search frequently, trying different keywords and databases in order to yield a greater variety of results." Likewise, a Fine Arts student commented:

I did not know that truncation, phrasing, and the order of operations was so critical in narrowing down the results of your research. I feel that this will prove to be very useful in my future research. In fact, I have already used some of the tips in researching for my music history class!

Another student wrote: "Truthfully, I used to think that I was doing a great job at utilizing the library database and I didn't think there was much need to improve, but boy was I wrong."

These examples indicate to us that, although students approached the information literacy labs confident in their research abilities, instead of holding them back from crossing a threshold many were pleased to learn new skills which they felt could help in future (or current) research projects. Although none of them described great difficulty or trouble with learning new searching skills or wrote about a dramatic 'a-ha' moment from crossing a threshold into new territory, the fact that many wrote positively about having learned new knowledge and skills to use in their research was a positive flag to us that they had crossed a threshold on their way to becoming more expert researchers.

Our second observation, students' views that "everything is a website", did appear in their journals as an impediment to learning new information literacy skills. This student's journal gave the clearest indication of difficulty:

We discussed how to use the University of Lethbridge's library website and the different components to it. These components included the *Summon* page, the catalogue, and the database page. [...] [We selected] ...key words and we

put them into the university's library website. This is a relevant skill because it can be used for finding sources for papers. However, personally I found it very difficult to use the website. There seem to be a lot of quirks to entering the keywords in to the advanced search portion of the website, and it took me a long time to figure it out.

A good number of other journal entries revealed a similar confusion and lack of clarity about the differences between the library's website, its *Summon* search tool, the library catalogue, and journal databases. Although students understood they were trying to learn helpful information literacy skills, many expressed frustrations. This student, for example, wrote,

I find the university library database to be extremely difficult and confusing to use. Previously I had not been properly instructed on how to maneuver [sic] the site and it caused me a great deal of frustration and anxiety when trying to find sources for previous assignments and papers.

The frustration seems to indicate a poor understanding of the distinctions among the search tools they were learning about and the differences between the university website and the many databases which can be reached through the website.

Journal entries such as these indicated to us that students were having difficulty crossing a threshold of understanding. Their old patterns of working and treating all online materials simply as websites was preventing them from understanding or successfully using powerful online research databases. The obvious frustration they felt points to a threshold – namely *Searching as Strategic Exploration* – which we will need to address in future iterations of the course.

The third point we noted, that familiar Google searches are easy while databases are difficult, also showed up in students' journals. This student noted, for example:

The chart given in the lab for finding research is very helpful and I will be using it for future research papers, as before I would stick to Google searching and wouldn't always find enough information. I found this topic interesting because I have struggled in the past with research and often have found it to be the most difficult part of a paper.

This student seems willing to cross a threshold into newer ways of researching and to recognize some of the limitations of Google. Another revealed a similar willingness to gain new insights: "This topic is interesting to me because I have wanted to improve my skills on finding information not using Google." This student described another course where research papers were required and, "...in that class... I usually used Google Scholar. The Web of Science is better than Google Scholar because you can view the popularity of the articles and the references that were used in the paper." And finally: "This is something that I wish I would have known last semester. I had to write a paper with not very much guidance and only knew of Google Scholar, so that is all I used."

These student comments suggest to us that one of the results of the information literacy labs was that at least some students had begun to understand the limitations

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of Google for academic research. It indicates that even if they had not yet attained expertise in using the research tools available through the library, they had learned that there were potentially better approaches to use than their familiar go-to tool.

Looking at the ACRL Framework, the main Frame – or threshold – that seems to be at play here is *Searching as Strategic Exploration*, though elements of other Frames also come into play. This frame focuses on the ability to understand that different search tools have different value depending on the information need, and the ability to select appropriate search tools and exhibit flexibility and persistence when using these tools. Also at work is *Authority is Constructed and Contextual* – the ability to determine the authority of a source, and *Information Creation as a Process* – understanding the scholarly communication cycle, and the various dissemination formats.

QUESTIONS AND POTENTIAL SOLUTIONS

We brought our experience – and our questions – to the 6th Biennial Threshold Concepts Conference held at Dalhousie University in June 2016. The question we asked our audience was, “what (active) instructional strategies would you use to help students cross these thresholds?” Many of the suggestions offered mirrored some of our own thinking. Having our students witness a live demonstration which shows how a library database can actually retrieve more authoritative, more pertinent resources more quickly than a Google search was one suggestion, which the librarian employed in the Fall 2016 labs. Another option would be to have students complete worksheets or quizzes on their own, immediately following their viewing of the instructional videos, so that the lessons are more immediate and concrete. Problem-based learning, where students must dive into the materials without any prior instruction and ‘muddle through’ on their own, could also be a way to force them into the learning process. And perhaps we just need to be more up front with students about the fact that they are about to encounter a threshold: “this is going to be difficult, and this isn’t going to be particularly intuitive, and you’re going to want to give up – but it’s normal to feel that way, you’ll get through it, and you will be glad you know this stuff in the end.” Helping students face the fact that they will be challenged allows them to work through the process in a less threatening way; they know they aren’t expected to breeze through it, and this allows them to take more chances without fear of failure, since we’ve told them they are unlikely to succeed on their first try.

Preliminary results from reflective journal assignments gathered from students in the Fall 2016 labs would suggest that having them search simultaneously in Google Scholar, *Summon*, and a library database did indeed have the desired result of getting them to truly understand the different type of results available from the various search tools. They seemed to have a better understanding of why one would choose a certain tool over another, and to see that Google was perhaps not always the best choice. Time will tell if this lesson really ‘stuck’, or if students will revert to their Google habit. However, the confusion from viewing all online materials as just websites indicates we need to find better ways to facilitate the students learning to

distinguish among various research tools and the different ways to use them. We intend to gather more data from future classes to see if a change in teaching methods was sufficient in getting them to cross the threshold.

Bravender, McClure, & Schaub's 2015 compilation of lesson plans geared to target the threshold concepts experienced in the ACRL Framework will also be a helpful resource, if time permits. There are concrete examples of how to demonstrate to students the difference between scholarly and non-scholarly sources, how to determine the reliability of information sources, explaining the difference between databases and search engines, etc. This has been a helpful resource for thinking through the active learning components for teaching these concepts to students. A similar resource for librarians looking for ideas is Burkhardt's *Teaching information literacy reframed: 50+ framework-based exercises for creating information-literate learners* (2016). Certainly as the course evolves over the next few years, examples from each of these resources will be considered and implemented.

LONG-TERM SOLUTIONS

Ultimately, however, it comes back to a matter of scaffolding. Information literacy really needs to be woven throughout the curriculum – as with other literacies, it is built upon right from early education and underlies all subjects. The structure of this particular Liberal Education class with its Lab component made it easy to incorporate four instruction sessions focused just on information literacy. By also having a research paper assignment, students then had an opportunity to put new information literacy skills to good use. The ACRL provides other suggestions for faculty members to start to think about how to incorporate the Framework into their own disciplines (<http://www.ala.org/acrl/standards/ilframeworkapps#usefaculty>); this has been further expanded upon in Godbey, Wainscott & Goodman's 2017 book, *Disciplinary Applications of Information Literacy Threshold Concepts*. Thinking about the Framework from this disciplinary perspective can help faculty members start to see how they might address these thresholds in an integrative matter, rather than a disconnected add-on to their usual coursework. For example, discussions could be held with students about the most likely producers of useful information in a particular discipline (i.e. academic, government, commercial entities). Faculty members could also discuss their own process of research, the sources they use, and the iterative processes they undergo while searching for relevant information. This would allow students to relate information literacy to their own fields of study, instead of seeing it as an 'add on' which isn't truly integral to their discipline. Only then will students realize the import and applicability of information literacy skills to their academic careers in addition to their lifelong learning.

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