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BEYOND BOOLEAN, TOWARDS THINKING: DISCOVERY SYSTEMS AND INFORMATION LITERACY

Abstract:

Purpose: As discovery systems take the Library world by storm, there is a new opportunity for user-centred information literacy programs to emerge. This paper will explore the impact that new web-scale discovery systems might have on information literacy programs and pedagogical approaches to library instruction.

Approach: Utilizing both a conceptual approach and a case study of one particular library, various questions and possible answers are discussed with the goal of opening new avenues for information literacy instruction.

Findings: Discovery systems offer new possibilities to shift instruction programs away from their historical focus on explanatory searching and citing, towards exploratory higher level thinking in relation to evaluating and using information itself. As library search gets easier and varied platforms become unified, the focus of information literacy on search rules and platform choice and navigation is (finally) able to truly give way to critical thinking and imaginative exploration.

Originality/Value: Many libraries have recently or are currently adopting discovery systems, but few have begun to explore and recognize the potential for a new era of instructional possibilities. This paper acts as a base for continuing exploration and discussion in this area.

Keywords: Web-scale discovery systems, discovery services, information literacy, library instruction, learning outcomes, critical thinking, Summon

Article Classification: Conceptual Paper

Introduction

Web scale discovery systems aim to assist users in discovering library content from a single search box, and to make library research as intuitive as Google but with the quality and comprehensiveness of valuable library collections. The Hong Kong Baptist University (HKBU) Library is the first library in Hong Kong to adopt Summon from Serials Solutions as the Library's discovery system, with a "beta" version launched to the public in the spring of 2012. Like many other libraries adopting discovery systems, we chose to name it "OneSearch" to stress its scope and function to our users. This paper will outline and discuss how the adoption of the system is expected to change the learning outcomes and pedagogical approaches used in our information literacy program.

Academic librarians have always wanted to teach students the full spectrum of information research skills. However, given the often one-shot one-hour instruction time, or in a better scenario, a series of progressive but still rather short opportunities, the idea has become our wishful thinking but never a reality. The time constraint, combined with the complex steps involved in selecting, accessing, and searching any individual database, makes it impossible for us to teach higher level information skills relating to critical and creative thinking - in many cases we even hardly have any time to mention these aspects.

Some argue that easier and faster access to information with discovery systems will likely dumb down students' information search skills, thus providing a poor foundation for higher degrees and future careers. However, we believe that this simpler and more direct way of information retrieval would actually free up time for instruction librarians to teach about information itself and how to engage with it in a useful way rather than teaching the "click here, click there" procedural steps and Boolean search strategies which students are unlikely to use again in the future, either in their daily life or after they leave university.

Possibilities for Change

As academic libraries adopt discovery systems as their gateway search tool, an opportunity arises to reconceptualize what our information literacy programs focus on and how we devise our teaching and learning activities. No longer must we focus on database selection and difficult Boolean searching (students have always struggled with this); instead, we might finally have the chance and the time to introduce students to the information itself, in all of its many faces, and to the research process itself instead of the "search tips" we have spent so much time on. Buck & Mellinger (2011) in surveying librarians from an early-adopting institution confirm that instruction librarians were now spending more time on understanding the iterative process of research,

resource identification, how to refine searches, evaluation of results, peer review, and citing, and were spending less time on Boolean, database content and choice, and the Library Catalogue.

Many instruction librarians with new discovery systems at their institutions must be asking - what possible approaches might we be able to adopt that are well-suited to this new form of discovery? First, it is important to note that to many of our users, this is not new at all! You type in some words and find many results, with the first results shown usually being the most relevant. What exactly is new about this? Being able to use a familiar experience could mean that our pedagogical approaches can shift from being explanatory to exploratory; students are in a semi-familiar world on the surface, and they can easily start to discover on their own how the content might be different from their usual search engines. Coco (2012) pointedly notes “what web-scale discovery borrows from Google does not make it Google ... because scholarly communications will never be like the things students use Google to find”, and he goes on to offer several ways that students can discover for themselves these differences much more easily now that they don’t have to worry about search syntax and database choice. Students, researchers and instruction librarians can focus on the nature of the content available instead of on search. This is a significant shift. Instead of always asking those preliminary questions of which database, what search rules, how do I navigate yet another search and display interface, our users can move beyond all of this to higher order questions: How much is out there on any given topic? Who is writing about it, in what ways, at what level? What non-textual materials are being created? What other disciplines and perspectives become visible now that we are searching from outside of a disciplinary database? Higher level exploratory thinking is both promoted and required to maximize the potential of discovery systems as research tools.

Secondly, faceting options in discovery tools also help to bring a new level of understanding of content. It is now explicit and apparent that there are these different “types” of information (though it may still be confusing for users to differentiate content types from format types – something discovery systems should do a better job of illustrating). Again, exploratory exercises might more readily expose the differences in scope and level of books vs. articles, scholarly articles vs. newspaper articles, etc. Even without using the faceting options, Corral & Sweet (2011) note that the integration of quality reference materials (as Wikipedia is so well integrated into top Google search results) can help to expose and guide students towards exploratory searching to find background information and vocabulary for use as they proceed further into their research. A perfect opportunity now exists to use students’ existing preference for and understanding of Wikipedia, to engage them in understanding the usefulness and purpose of our excellent reference collections. If students can connect the content type of “Reference” (or perhaps this should be renamed to something more meaningful such as “Background”) with their experience of Wikipedia, we believe they would soon be looking for and limiting to such materials at the beginning of their research projects.

Finally, the 2011 Horizon Report notes that educators will have to provide more guidance re: sense making, coaching and credentialing – for problem solving and critical thinking (Johnson et al, 2011). In the realm of discovery tools and information literacy, librarians have an opportunity to play a role in ensuring that students are able to put the massive amounts of content available into relevant contexts. This is not merely a skill but an attitudinal attribute – students (like all of us in any given situation) need the desire to go beyond “satisficing” or they never will. Cmor, Chan & Kong (2010) suggested that although first year students at HKBU could demonstrate their learning in utilizing library databases, they chose not to apply that learning to their research projects and relied on internet resources almost exclusively (Cmor, Chan and Kong, 2010). It is not only that when library tools become easier to use, then the smaller “extra effort” might increase their usage - it might also be that if our instructional efforts shift focus, students may be able to make better choices in relation to satisficing; they may better understand what is gained and what is sacrificed, so they can better choose when satisficing is appropriate (sometimes it is) and when it isn't.

Current HKBU Information Literacy Program

The information literacy program at HKBU Library is a well-established, curriculum-integrated program of progressive learning. All undergraduate students have several information literacy learning experiences built into their programmes including an initial orientation workshop, an online academic integrity tutorial, and a required course on information management technology that has strong information literacy components. Beyond this base, several departments invite librarians to teach in research methods courses and/or to provide final year workshops to students as they prepare to write their “capstone” final year projects.

At the postgraduate level, many of our taught programs invite librarians to teach orientation workshops and we offer a voluntary 5-workshop “research support” series specifically targeted towards research postgraduate students. This paper, however, will focus on undergraduates, as we believe they will be the most immediate beneficiaries of our new system.

In recent years, the University has adopted an outcomes-based teaching and learning (OBTL) policy and the Library was an early adopter in ensuring that its program-level and course specific instruction followed an OBTL model.

Current and Revised Learning Outcomes

Using the OBTL approach, we regularly identify learning outcomes, assessment methods, curriculum and pedagogy for all library instruction sessions. We have selected three (3)

instruction course plans as examples to illustrate our current practice and the anticipated changing practices. The followings are brief descriptions of the three courses.

1. uLife Library Orientation

The uLife program is a series of seminars and activities required for all new undergraduate students upon entering the University, and a Library workshop is one component. The Library workshop is composed of a 30-minute online self assessment to determine students' level of information competence and ability to use libraries and other information resources (using the Research Readiness Self Assessment tool) and a 30-minute introduction to the Library, with a focus on their immediate needs - finding books and course reserves.

2. IMT (Information Management Technology)

Since 2008 the Library has been well-integrated into what was then a newly revised, required first-year course. Along with input on the requirements of the final project and its assessment, teaching librarians conduct a workshop and provide an exercise on accessing and searching library databases in order to find articles for their course project.

3. ENG2240 (Research Skills in English Language & Literature)

This is a two-session library instruction workshop for a required research methods course for English majors. Students are introduced to both literary and language databases, advanced search techniques, and citing practices in the literary and linguistics fields.

Table 1 below outlines our previous learning outcomes in comparison with the new learning outcomes that we plan to adopt. Discussion will follow.

| Current Learning Outcomes | Revised Learning Outcomes |
|--|---|
| <p>uLife</p> <ul style="list-style-type: none"> ▶ Describe what the Library Catalogue includes and does not include ▶ Search the Library Catalogue to find books and Course Reserves (by title, author, keyword, course code) ▶ Interpret the catalogue record to access print, electronic, and multimedia items ▶ Identify main keywords in a topic for use in searching | <p>uLife</p> <ul style="list-style-type: none"> ▶ Describe two differences between information found on Google and that found on OneSearch ▶ Utilize OneSearch facets to limit search results, e.g. to books, articles, videos ▶ Access the fulltext – online or in print |
| <p>IMT</p> <ul style="list-style-type: none"> ▶ Access and search a newspaper | <p>IMT</p> <ul style="list-style-type: none"> ▶ Describe common types of information |

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| <p>database to find news articles</p> <ul style="list-style-type: none"> ▶ Access and search a multidisciplinary database to find magazine/journal articles ▶ Turn a topic into an effective search query using Boolean and truncation ▶ Check for fulltext of an electronic article via WebBridge (link resolver) | <p>and their uses (websites, books, reference books, articles, etc.)</p> <ul style="list-style-type: none"> ▶ Differentiate when it is best to use Google and when it is best to use OneSearch ▶ Choose appropriate keywords to conduct a search ▶ Explain why citation is necessary and use the OneSearch citation generator |
| <p>ENG2240</p> <ul style="list-style-type: none"> ▶ Identify and access major literary/linguistic research tools ▶ Narrow a general research topic to formulate a focused thesis ▶ Develop good strategies to search the literary/linguistics databases effectively. ▶ Describe the role of book and journal literature in academic research ▶ Cite using MLA or APA | <p>ENG2240</p> <ul style="list-style-type: none"> ▶ Narrow a general research topic to formulate a focused thesis ▶ Distinguish the purpose and power of different resource types (e.g. current VS historical literary reception; popular VS scholarly language debates) ▶ Describe the purpose of citation in relation to scholarly communication ▶ Critically evaluate both the quality and relevance of different types of information ▶ Critically assess search results for relevance in order to revise and improve (e.g. does content types found match need/purpose) |

Table 1. Comparison of the current and revised learning outcomes

As the above examples demonstrate, the learning outcomes for undergraduate workshops were typically composed of accessing and searching for information. These skills, although essential, address only one aspect of the research process while neglecting those aspects relating to critical and creative thinking.

Discussion

OneSearch provides us a perfect opportunity to move our focus away from explanations and procedurals and allows us to focus our teaching on understanding and evaluating information -- how information is produced, types of information and their uses, how scholars and researcher communicate, and how to evaluate quality and relevance of information based on different types

and needs, etc. Though we will continue to engage students in the importance of choosing appropriate keywords for their searches (this actually is a higher level, critical and creative thinking skill), most of the other topics we have felt compelled to ensure students were aware of can be skimmed over or dropped altogether, at least in lower undergraduate courses: differentiating the catalogue from databases, selecting and accessing an appropriate database, constructing searches using Boolean and truncation, understanding that databases are broader than our Library subscriptions and they must check for fulltext access using our link resolver, and navigating and understanding screen results from various library search tools.

The mixed information sources in the search results of OneSearch provides a good context for librarians to teach the nature and use of various information sources – with concrete samples easily found in the search results. More time can be spent on how to analyze and evaluate results, e.g. knowing what types of information can fulfill what information needs, how to evaluate the results, how to use facets wisely, and determining which results are most relevant both in content and in type.

A recent study shows that students are transferring their search behaviour from web search engines, to academic research tools (Summon at University at Huddersfield). Hence the appearance of OneSearch provides us a perfect opportunity to build student knowledge and skills from a developmental perspective, based on what they have already learnt from the world of the Internet and develop their skills further.

In our pedagogical approaches, we can adopt a more developmental and constructive approach. We plan to provide more exploratory exercises and scenarios instead of explanations and prescriptive guidance. Students will be able to explore, analyze, and come to conclusions for themselves, making such conclusions more meaningful and relevant. For example, in uLife, we can design exploratory exercises to have students use Google and OneSearch to search for information on a given topic, and then compare the results, examine the content, and find the obvious differences themselves. This will replace librarians conducting a lecture explaining the types and purposes of different library search tools. Deeper, more authentic learning will occur with our guidance and hands-on exploration and practice, rather than our explanation and demonstration.

Discovery systems help students uncover the interdisciplinary aspects of academic topics, and we plan to help them use the tool to define the focus and perspectives of their research topics, e.g. some language topics have educational or psychology or cultural perspectives, as well as linguistics perspectives. Specifically, we plan to use OneSearch results pages to assist students in successive “mind-mapping” exercises to help them focus a topic and find an angle that is of interest to them. Due to the interdisciplinary nature of the tool and the various content types, a

simple and broad search on cloning, for example, will immediately show many angles of the topic to a first year student – medicine, religion, technology, ethics, etc. And if a student then tries a search on cloning ethics, they will see the angles related to the ethics of therapeutic cloning, the ethics of animal cloning, the political and social arguments, etc. Disciplinary databases simply do not illustrate this variety in such a quick, easy and obvious way for students. OneSearch is also a good tool for students to explore and conceptualize previous research done on a topic. In our ENG2240 course, we aim to help students to use OneSearch as an exploratory tool to get an idea of how much has been written to evaluate a chosen topic as a feasible one for a second year topic (too much or too little, too broad or too focused a topic).

Time spent on the minute details of proper citation may also be reduced, as we move towards relying on the built in citation generator of our discovery system. Currently, some databases have a citing function, some don't, and so we always had to ensure that students could do it themselves. As generators get better and as OneSearch becomes the default search tool, this will give us the chance to focus less on mechanics and more on the meaning and purpose of citation - both in scholarly communication and in everyday ethical situations, e.g., attribution to a colleague if something is his/her idea! It is the idea (and elements) of citation which are important, not the order and punctuation requirements. We also hope to extend our reliance on students' own knowledge and experience by incorporating a Facebook "Like" or "Dislike" analogy to citing – investigate what other people think, like or dislike, but that isn't enough – you must then engage in the conversation yourself explaining and building an argument as to why you like or dislike another piece of scholarship based on how it relates to your own paper.

Finally, we expect that OneSearch will facilitate and encourage the iterative process of research – to search and evaluate, to "get a feel", narrow or broaden or shift focus, and then to search again based on what they have learned from the searching process itself. This will help students to move away from the mechanical steps of finding information to thinking critically about the information with which they are working.

Anticipated Responses of Students and Faculty

Our revised learning outcomes will, we believe, be welcomed by undergraduate students as these new outcomes are more firmly in line with their own information "consumer" experience, have more meaning than previous outcomes related to seemingly arbitrary and inconsistent search rules across tools, and most importantly, can be applied more readily both to their academic information needs and to their professional/personal needs that will remain beyond their university years.

We expect that our teaching faculty will have a mixed response to our discovery system and to

our proposed changes to base information literacy skills. Some will welcome the new system's ease with the hope that their students will use it more readily instead of relying so heavily on Google and Wikipedia. Others will feel strongly that even at introductory level, students should become familiar with the standard databases and tools of their discipline.

For citation as well, we expect that students will welcome a fairly comprehensive search tool that will assist them with the mechanics of citing in a number of standard citation styles. Faculty may have mixed feelings once again – many will be relieved to see comprehensible bibliographies, while some will feel that automatic generators are “too easy” and students will not learn the manual skills that they still believe are necessary. We expect that there will be a shift in thinking as faculty use these automated tools more and more as well.

As our role is both to develop generic information literacy skills in our student body and to support disciplinary research as defined by the teaching faculty in those disciplines, we anticipate that we will be engaged in rich conversations with our faculty about the learning needs of their student in this new environment – conversations that we are most eager to have. We hope that the adoption of OneSearch will provide new opportunities to engage and work with our faculty in supporting the teaching and learning needs on our campus.

Concluding Thoughts

Many libraries, including the HKBU Library, have adopted the ACRL Information Literacy Standards to assist in guiding instruction programs. Prior to adopting our OneSearch tool, we tended to spend most of our time and energy on Standard #2 (particularly searching) and Standard #5 (particularly citing). We believe there will be a shift to focusing more on Standards #3 and #4, the evaluation and use of information – not only to write an academic paper but to pitch a business proposal or to make an important personal decision. Fagan (2011) suggests that it may indeed be time to revisit our information literacy standards, a proposal which we would support. Though they have done us well for many years, the information landscape has changed, user experiences have changed, and so the standards by which we judge someone to be information literate should no doubt change with the times as well.

Also, as higher education shifts (back) towards a broader, general education to prepare students for lifelong learning in a complex, global society, there is more and more reason to shift our instructional emphasis away from solely “academic” information literacy, to include professional and personal information literacy. Perhaps it is more important to help students understand the purpose and uses of blogs in a professional field, than to solely focus on a specialized database that they may never access again. This is source differentiation again. We should not set up a Google vs. OneSearch dichotomy, but use each to help our students better understand the other.

Google helps users search in OneSearch. OneSearch helps users understand there are many types of information sources – journal articles, videos, tweets, books, reference materials, blogs - each with their own purposes and uses. Understanding these purposes is the key to selecting and critically evaluating information in relation to the need at hand, key to thinking about information not just consuming it, key to being able to wisely find and use the right information at the right time. Boolean you say? What's that?

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