Hanz (*Liaison Librarian*) and ***Lange*** (*Liaison Librarian*) McGill University [Montreal, QC]

BEYOND THE UNIVERSITY GATES: EFFECTIVE METHODS FOR TEACHING CAREER-ORIENTATED IL SKILLS TO STUDENTS IN PROFESSIONAL PROGRAMS

KATHERINE HANZ AND JESSICA LANGE

INTRODUCTION

It is essential that students in professional programs such as education, business, social work, nursing and medicine graduate university prepared with the skills required for professional practice. Information literacy is one of these integral skills, as professionals must have the ability to find and evaluate information from a variety of sources, as well as incorporate this knowledge into their professional decision making (Association of College and Research Libraries, 2000; McGuire, Lay, & Peters 2009; Sullivan & Rosin, 2008). According to the Association of College and Research Libraries (2000) the development of lifelong learners should be central to the university's mission. With this in mind, library workshops should encourage the development of information literacy competencies that move beyond preparation for class assignments and train students to conduct "self-directed investigations" as they advance into the professional world (p. 4).

In an attempt to foster lifelong information literacy skills, a business librarian and an education librarian from McGill University (Montreal, Canada) re-framed their library workshops to focus on the development of real world, rather than solely assignment-driven information skills. To achieve this aim, the librarians presented the students with real-life problems during their in-class information literacy instruction, thereby asking students to imagine themselves as future professionals faced with a particular dilemma. To resolve the dilemma, students needed to demonstrate information literacy proficiency at a number of levels, as they worked to determine what type of information was required, how to find that information, how to evaluate that information, and, finally, how to incorporate the information into their professional decision making.

In this interactive workshop presented at LOEX 2013, the presenters provided a brief history and background of problem-based learning and discussed their own best practices for using problem-based learning activities in one-shot information literacy sessions. Attendees then worked together in small groups to develop a repertoire of problem-based learning activities for their own subject areas. The merits and challenges of running such an activity were then discussed as a larger group.

LITERATURE REVIEW

Shortfalls of Information Literacy Instruction

Due to time constraints in one-shot information literacy workshops, it is common for librarians to focus their instruction on addressing students' immediate practical concerns and to plan lessons that answer basic questions such as: How do I find a database?; How do I search for an article?; How do I find the full-text of an article? However, cramming answers to these practical "how to" questions into a one-shot workshop may be counterproductive. Firstly, students may become overwhelmed when presented with a laundry list of resources and retain very little information, particularly if they are given no opportunity to use these resources or apply research skills (Kenney, 2008). Secondly, such a presentation gives students a false sense that research simply involves following a prescribed list of linear steps to arrive at a particular set of results. As Diekema, Holliday, and Leary (2011) suggest, students leave such workshops with "superficial information literacy skills" which do not necessarily translate to the real world (p. 261).

Problem-Based Learning: A Brief Overview and History

Research suggests that practical, hands-on activities provide a more productive method for teaching information literacy skills than librarian-led demonstrations (Diekema et al., 2011). Problem-based learning is one such active-learning technique, where control of the learning is turned over to the learners and the instructor takes a step back to serve as a classroom facilitator (Carder, Willingham, & Bibb, 2001; Macklin, 2001; Snavely, 2004; Spence, 2004). Rather than leading students step-by-step through the research process, the instructor provides the class with a real-world or authentic problem to analyze and solve. Working in teams with their classmates, students are asked to identify the problem, determine what information they need to solve this problem and then generate a possible solution. Working through this process helps to prepare students for the type of problems they may face in their future professional lives (Hsieh & Knight, 2008).

Problem-based learning was first developed at McMaster University's Medical School in the 1960s as an alternative to lecture-based education, which was not adequately preparing future doctors to succeed in the complex, real-world environment they would face after graduation. Effective and up-to-date medical practice requires that doctors have the skills for life-long learning and problem solving (Chang & Chen, 2011; Spence, 2004). More recently, problem-based learning has been adopted by other disciplines including engineering, biology, communication studies, business and education (Brenenson et al., 2002; Carder et al., 2001). Beginning around 2004, problem-based learning began to appear more-widely in the library literature (Snavely, 2004).

Problem-Based Learning and Information Literacy Instruction

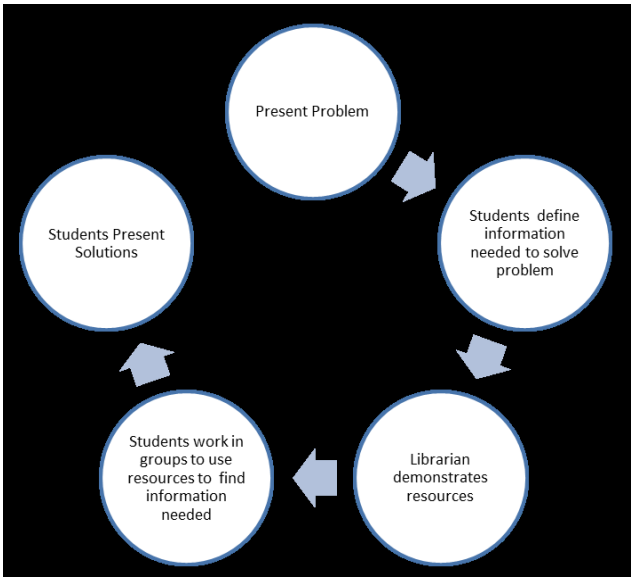
The goals of problem-based learning are similar to those of the ACRL's Information Literacy Competency Standards for Higher Education, making such activities an easy fit for information literacy workshops. Problem-based learning encourages students to define and resolve an information need, and its ultimate goal is to provide students with the skills necessary for lifelong learning and professional success beyond the classroom (Blummer, 2007; Chang & Chen, 2011; Hsieh & Knight, 2008). Pelikan (2004) suggests that the toughest challenge students face is understanding *what* they are looking for and *why* they are looking for it. Problem-based learning asks students to take a step back and consider both of these questions.

Much information-literacy instruction focuses on ACRL's Standard Two: "The information literate student accesses needed information effectively and efficiently" (p.9). While the ability to locate and access information is important, true information literacy involves more than just mastering a set of skills to find resources. Problem-based learning activities ask students to consider what they know along with what they need to find out prior to beginning the problem-solving process. This process aligns well with ACRL Standard One: "The information literate student determines the nature and extent of the information needed" (p. 8). Once new information has been discovered, problem-based learning requires that students integrate this new information into their knowledge base. This integration aligns itself with Standard Three: "The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base" (p.11). Problem-based learning can help students realize that research is an iterative rather than a linear process. Based on their study, Diekema et al. (2011) found that problem-based learning helped students to "reframe information literacy as a process of using information to learn and make informed decisions" rather than just the process of finding sources (p. 264).

Incorporating Problem-Based Learning into a One-Shot: A Practical Model

Incorporating problem-based learning within the constraints of a one-shot session may seem difficult; however, the literature suggests some practical solutions and potential modifications. The following figure presents a variation on the model recommended by Brenenson et al. (2002) and Kenney (2008) for information literacy workshops.

Figure 1: Problem-Based Learning Model



According to Kenney (2008) when time constraints are an issue, it's important for the librarian to create a timeline. She suggests the following:

- 10 minutes to review and analyze the problem
- 10 minutes to introduce the pre-determined sources and databases
- 30 minutes to locate and evaluate the information
- 10 minutes for team consultation and decision-making

- 10 minutes for class debriefing

Other authors suggest time-saving measures that make problem-based learning activities possible even in sessions as short as 50 minutes. Spence (2004) suggests giving students a specific question to answer rather than a more open-ended problem. Students will need to employ the same skills to answer this question, but will spend less time off the top as the query is more focused. Pelikan (2004) advocated for collaborating with teaching faculty to distribute the problem scenarios to students prior to the information literacy workshop. Students then spend valuable time considering the problem and their information need prior to class, and come in ready with a well defined sense of their problem and what they are looking for. Carder et al. (2001) suggest that problem-based learning activities can be done more easily when students have already received an initial library orientation in a prior workshop. In this case, the librarian may be able to bypass the demonstration step, as the students are somewhat familiar with the library and its resources. Finally, Brenenson et al. (2002) suggest that students may simply not have enough time to entirely resolve a problem, but that the activity is still incredibly valuable as the process itself is more important than the final solution.

CASE STUDY: PROBLEM-BASED LEARNING FOR MCGILL'S MANAGEMENT STUDENTS

The course MRKT 451 (Marketing Research) at McGill University provided an excellent opportunity to apply problem-based learning in the classroom. As a part of this course, students were expected to acquire the skills to solve real-life marketing problems. In addition, all students had previously seen a librarian demonstrate the major marketing resources in a prerequisite marketing class. As suggested by Carder et al. (2001), this meant that the librarian would be required to spend less time demonstrating resources.

The structure of the class was such that the librarian had 50 minutes in which to operate her activity. The librarian followed the problem-based learning model discussed earlier—she briefly demonstrated the resources at the beginning and then organized students into groups of three or four and gave them one of five problems. There were approximately 40 students in the class so each problem was assigned to two groups. The class then concluded with a discussion and debriefing.

Five problems were used in order to demonstrate the full breadth of marketing resources available (e.g., industry research, consumer research, article research). However, that number of questions is generally inadvisable as the final stage of the problem-based learning model (the debriefing) can be difficult to manage, particularly if there are time constraints. As the debriefing is the last stage of the model, it is often the easiest component to leave out; however, the authors caution against this tendency. Peer-to-peer learning and the discussion that emerges from the debriefing is often the most important part of the process and, if possible, should not be neglected. The business librarian is currently reconsidering how to best approach problem-based learning in this class and intends on reducing the number of problems for future semesters to better facilitate the debriefing component.

Sample Problems Used in MRKT 451:

- You work at a company that sells camping equipment. Although the company has a small and devoted group of loyal clientele, they're having a hard time increasing their customer base. They want to know what are the effective strategies for increasing awareness of their brand?

- Your company (a local day spa) has been trying unsuccessfully to incorporate social media into its marketing strategy. How would you determine what these best practices are and how effective are certain strategies?

Things to Consider When Running the Problem-Based Learning Activity

1. Class size and setup

How many students are in the class? How easy is it for students to be organized into groups given the desk space, etc.? The authors have generally done problem-based learning in class sizes of 15-40 students because more than that would require significant logistical considerations.

2. Computer availability

This will depend partly on your approach to the problem. Do you want students to actually locate an answer? Or is the activity more of a thinking exercise? Hands-on work with the resources is always ideal, however, time constraints and classroom setup may dictate that the students hypothesize where they would go rather than delve directly into the resources.

3. Number of problems

How many resources do you wish to demonstrate? When designing your problem(s) it is best to consider your learning objectives first and then design the problem(s) from there.

4. Level of the students and library resource familiarity

Have the students seen a librarian before? How comfortable are they with the resources you wish to demonstrate? If they've never seen the database you wish them to use, more time will need to be spent at the beginning explaining and demonstrating the resource.

5. Time

How much time do you have in the class? When the authors have run this activity they've generally had around 60 minutes. How much time you need will be affected by some of the considerations above. For example, if the students are already familiar with the resource(s), then less time can be spent on that

component. Or if you're only using one problem, less time can be spent on the debriefing etc.

Best Practices for Designing Problems

Carder et al. (2001) and Macklin (2001) suggest four basic elements for designing a good problem:

1. Relates to the real world
2. Interesting or controversial.
3. Incorporates learning objectives.
4. Has a "right" answer.

Of these elements, the one which requires the most discussion is number four. While all problems will essentially have a "right" answer, the complexity of this answer is what needs to be considered. For example, does the problem have a one to one ratio (one problem = one resource to solve the problem)? Or, does solving the problem require the use of several different resources? Is the point of the problem to demonstrate the complexity and ambiguity of the information sphere?

How the librarian designs the problem will relate directly to the level of the student, their familiarity with the resources, and the time the librarian has.

Discussion

A number of interesting discussion points and suggestions, which warrant further consideration, were brought up by attendees during the discussion portion of the LOEX presentation. Noted below are a few of the most salient points:

- **Accessibility to Resources after Graduation:** Business librarians were particularly concerned that the resources they were teaching students would no longer be available to them once they were professionals. To what extent should we be focusing our teaching on resources that will be available to students after they graduate? Some suggestions were that free resources or resources typically available at public libraries should always be incorporated into a library session.
- **Professional Partnerships:** Could students partner up with real professionals to be given true real-life problems that the professional had encountered? Although this would require significant collaboration between the professor and the librarian to set up this interaction, it is an exciting possibility.
- **Beyond Professional Programs:** Is problem-based learning only useful for professional programs? How would one integrate this type of activity into a humanities context? Some suggestions raised were to use current events/news stories.

Conclusion

Problem-based learning is an effective and exciting strategy for engaging students in professional programs with information literacy instruction. The goals of problem-based learning are well aligned with those of ACRL's Information Literacy Competency Standards for Higher Education, as both encourage the development of life-long learning skills that will serve students beyond the university classroom. Problem-based learning activities push students to consider the role of information in the decision-making process. More than just having students *find* information, problem-based learning activities provide students with the opportunity to practice *using* information to make decisions—a skill that is integral to their future professional practice.

The practical strategies discussed above—taken both from the literature and from a case study at McGill University—provide librarians with a framework for incorporating problem-based learning into their own information-literacy workshops. The productive group discussion raised a number of points for future consideration.

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