

Online resources in information and geospatial literacy for students at McMaster University

Opportunity

Students and instructors alike at McMaster University recognize that students entering university need broad support in developing the critical thinking skills necessary to be successful in their academic careers and, indeed, to be successful throughout their lives. In an information-rich world, these skills extend beyond mastery of their discipline. They include the ability to define research questions and find and effectively using appropriate resources, regardless of the format. The transition from high school to post-secondary education in terms of research practices and access to material is challenging for many and they often turn to the library staff for help. Currently, one hour of training is offered to class groups at the discretion of the professor and individual support is given to students who request it on a one-off basis. Neither of these is seen as adequate to equip the majority of students with the skills they need.

Geospatial literacy has gained considerable importance in the last decade. Students require considerable support in locating and using resources, including digital maps and aerial photographs that provide information on both natural phenomenon and human activity on the planet. Geospatial literacy is important, not only in science disciplines, but also in history, classics, sociology, and a growing list of other fields. Both information and geospatial literacy are essential for successful student learning.



Mills Memorial Library, McMaster University

With over 26,000 students, the challenge of reaching every student may seem daunting. However, the desire to instill the necessary information and geospatial literacy skills remains strong. At a May 2011 symposium on the future of the academic library, a panel of students clearly stated that they recognized the importance of these skills but were dissatisfied with how the training is offered at McMaster. It was a strong call for thinking differently about the approach.

The current system of instruction and support faced a number of significant challenges:

- The instruction is resource-based and focused on how to use particular tools and reference sources. Given the massive volume of information sources available, this method is no longer practical or effective. The students need to develop research strategies in addition to familiarity with sources.
- Rather than the one-hour introductions, the students want research support that is available all the time so they can access exactly what they need to know when they need to know it.
- Students may be taking multiple courses that integrate the training in library usage and consequently hear the same information more than once.
- Students have different levels of informational and geospatial literacy and would benefit from training more specific to their needs.

Innovation

The University Librarian, Jeffrey Trzeciak and the Director of the Centre for Teaching and Learning, Susan Vajoczki, led a group, including library staff, professors, students, instructional designers, and other stakeholders in the development of online modules to present information and geospatial literacy training for students.

They created two sets of modules – one for each form of literacy. Each module is divided into short segments and takes about an hour to complete if followed straight through. However, the design of the modules in segments encourages students to focus on the areas in which they have the most difficulties.

The modules are built around the key skills of information and geospatial literacy:

- Determine the information needed by developing a well-formulated question and understand how the information is organized.
- Be aware of and able to use the tools and resources available.
- Access the information effectively and efficiently.
- Evaluate the information and its sources.
- Use the information effectively, with consideration of the social and legal issues, as well as ethical principles.

The modules use video, audio, text, and images to convey the content and have quizzes so that the students can assess their progress and understanding. They have been designed according to the principles of universal instructional design so that they are accessible by students with disabilities.

The two modules are being piloted with 4,000 students during the fall 2011 semester. Instructors have integrated the modules into their classes in different ways – making the completion of parts of the module a prerequisite for a lab or other exercise, or assigning grades to the completion of the modules. As the modules are in the Learning

Management System, student progress can be tracked. Instructors were willing to participate in the pilot phase because of this flexibility in how student participation was encouraged and assessed.

The Centre for Leadership in Learning has commissioned an extensive research project to look at the effectiveness of the modules, quantitatively and qualitatively, in terms of student experience and learning effectiveness. The assessment will include students, professors, librarians, and other stakeholders, as well as a cost-benefit analysis of the modules compared to the traditional instructional method. In the summer of 2012, the modules will be revised based on the results of this study.

Outcomes and Benefits

As the revised modules are made available to all students, the demands on the library staff for basic instruction should diminish, allowing them to focus more on helping senior students with more complex inquiries and special groups, such as international and mature students.

Preliminary feedback has been positive as the students are able to do assignments more easily, instructors have to answer fewer research strategy questions, and library staff has seen positive changes in how students function. The library has already been able to reassign one individual from primarily undergraduate support to graduate support.

Challenges and Enhancements

The challenge of information literacy is that, while it is relatively straight forward to show students how to use one particular data base or reference source, it is more difficult to impart higher level research skills. To become effective learners and researchers, students need to acquire skills in clearly defining their research questions, assessing a range of possible resources, and evaluating the usefulness and credibility of the information gathered.

Introducing a new approach is accompanied by significant up-front technical and production costs. While it may be cheaper on a one-year basis to provide face-to-face training, the modules are expected to be cost-effective in the longer term.

The developers would like to make the completed modules more widely available to alumni, the community, high school students, and others who would benefit from the content. The strategies for this are being considered during this pilot phase.

Potential

Susan Vajoczki and Jeffrey Trzeciak recognize that McMaster is not the only post-secondary institution in Ontario facing the challenge of providing their students with the

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tools and support to achieve information and geospatial literacy. Although these modules are quite specific to McMaster in the choice of images for example, a more generic tool could be prepared using the concept, experiences, content, and research results from McMaster. A province-wide post-secondary initiative could build generic information and geospatial literacy tools that could then be made institutionally specific and used throughout Ontario. McMaster would be open to participating in a project of this nature.

For Further Information

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