

Using Electronic Resource Guides to Enhance Information Literacy Skills

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Abstract

The importance of teaching information literacy skills to college students cannot be overstressed. Due to the explosion of electronic information resources, it is critical that engineering and science students learn key research skills that help them locate, evaluate and utilize information effectively, efficiently and ethically. Such skills will help them become informed students and instill a desire for lifelong learning ensuring they will be valued employees and citizens in the future. Incorporating information literacy skills into a curriculum or specific course, in an organized manner, is difficult. The ABET standards for information literacy highlight the importance of including this instruction in the engineering curriculum. At numerous institutions, the individual instructor determines how and when this is accomplished. For many instructors, there is not enough time in the academic calendar to do all that is required. Consequently, information literacy skills maybe mentioned in passing or completely eliminated to make room for other topics in the syllabus. Academic libraries have developed tools to help students learn basic skills online and to enhance these skills as their research becomes more varied and complex. At George Mason University, librarians have developed two different tools to assist both students and faculty researchers: InfoGuides (also called LibGuides) target undergraduates, while Research Portals assist faculty researchers and graduate students. This paper discusses the ways that engineering faculty can use electronic research guides to help students develop their information literacy skills. Examples of these tools and how they are used are also provided.

Introduction

The importance of including information literacy instruction in the engineering curriculum has been emphasized in standards issued by both the Association of College and Research Libraries (ACRL) [1] and ABET, the engineering education accreditation board [2]. Information literacy is crucial to the success of engineering students both now and in the future. Finding ways to teach students the key research skills they need to locate and evaluate information, however, can be difficult. Although most schools offer courses in library research and writing, they may not be required. If those skills are not taught within the context of their engineering classes, the students may never be exposed to them. Engineering faculty are already dealing with a full curriculum and may not have time to include information literacy instruction in their syllabus. In other cases, faculty may not possess the requisite skills to teach information literacy topics. Consequently, information literacy may be mentioned in passing or instruction time for it may be completely eliminated to make room for other topics in the syllabus.

Academic libraries have developed tools to help students learn basic information literacy and research skills online and to enhance these skills as their research becomes more varied and complex. At George Mason University (GMU), librarians have developed two different tools to assist both students and faculty researchers: InfoGuides target undergraduates, while Research Portals assist faculty researchers and graduate students. Each tool allows librarians to highlight relevant information resources and provides a platform for collaboration and instruction. This paper provides an example of how an electronic research guide can be integrated easily into a course as a way to help students develop their information literacy skills.

Background

Research guides, or pathfinders, have been created by librarians since at least the 1950s [3]. Originally they were little more than recommended reading lists, but over the years they have morphed into a collection of resources intended to be a starting point for research. As the content has changed and evolved, so has the format. As mentioned earlier, the number of authoritative information sources available online has exploded in recent years. Today's university library may offer users hundreds of literature databases, as well as electronic journals, electronic books, and other online media. In an effort to corral these resources, research guides have also moved online, becoming more interactive in the process.

Increasingly, research guides are also being seen "as a curriculum tool for bibliographic instruction" [3]. Brazzeal [4] points out that while research guides cannot replace the personal interaction at the reference desk or in an instruction session, they are a way to make students aware of library resources and services as well as how to use them effectively. Many of the infoguides which receive the highest usage at GMU (e.g. Education, Nursing, GIS) are those that are used in a high number of instruction sessions per semester. Infoguides also enhance instructional opportunities at the reference desk as they can provide direction for reference librarians working with students whose research topics may be outside that librarian's area(s) of expertise.

Educators and librarians have advocated the incorporation of information literacy instruction into the curriculum since the 1970's [5]. This type of instruction has become increasingly important in recent years, particularly to engineers and other technical professionals. While it is impractical to try to cover all of the ACRL information literacy standards in a research guide, they are well suited to address portions of Standard One (Know) and Standard Two (Access) [1, 4]. These standards also fall in line with ABET's Criterion 3(i) in which it states that engineering students must show "a recognition of the need for, and an ability to engage in life-long learning" [2]. Engineers must become lifelong learners in order for them to be capable of reinventing themselves as industries change and evolve during their careers [6]. Engineers who do not have the ability to learn and adapt to changing times will soon be left behind. Having the ability to learn does not imply that an engineer will be an expert in many subjects. Instead, it means that they will be able to identify what they need to learn and then find and analyze the appropriate information sources to further their knowledge [5].

Many students believe that they are expert searchers and that they can locate anything they need on the internet simply by searching Google. Studies have shown, however, that the students with

the lowest information literacy skill level tend not only to be unaware of their incompetence but also overestimate their ability [7]. Even faculty members think that because today's students grow up with computers and the internet, they don't need to be taught how to research or that they will pick it up on their own simply by completing their assignments [8]. These assumptions will often lead to frustration as the students are expected to conduct scholarly research but don't have any idea where to begin or what qualifies as scholarly. When directed to them by librarians or faculty, research guides can help to alleviate that frustration by reducing the number of choices and providing information about how to evaluate and utilize those resources.

Research Guides at GMU

George Mason University Libraries has developed two different tools for researchers aimed at their level of knowledge and research skills. *Research portals* are a tool for faculty and graduate students to access various types of electronic resources, both library-owned and publicly available. *InfoGuides* are subject or course-specific research guides that target undergraduate students, access to library research resources, instructional materials, etc.

The development of research portals began in late 2007 in response to a recommendation from the GMU President's library task force. This recommendation called for the libraries to do everything they can to increase the productivity of both faculty and students. With this in mind, the library began developing discipline-specific research portals for various graduate level programs. Ideally, the portals are created in collaboration with the faculty and graduate students from the program. Working together ensures that those resources and tools used most often will be included and it provides a connection to their liaison librarian. Currently eleven portals are completed and many others are under development. (Please visit <http://researchportals.gmu.edu/>; <http://library.gmu.edu/portals.html> to view portals that have been completed.)

During the summer of 2008, the George Mason University Libraries began an initiative to migrate existing library research guides (both print and electronic) to the LibGuides software. This software offers librarians several advantages over the traditional print and web formats including:

- LibGuides software offers a solution that makes it easy to create customized research guides for departments or individual courses;
- The software is easy to learn and to use; users do not have to be fluent in html;
- Software features include the ability to embed RSS feeds, video, custom widgets, etc. very easily into a guide.
- Guides developed with the LibGuides software are easier to maintain and to update than more traditional research guide formats.

Librarians at GMU have created over 150 research guides on a number of topics for departmental use and for use with specific courses. Although the main target for the infoguides is undergraduate students, researchers at all levels will find them useful. An individual infoguide brings together the core information resources for a particular subject or class, thereby directing research from the start. In addition, the infoguides are used by librarians when conducting library instruction classes as a way to walk the students through the resources and as a "take

away” which the students can refer back to when working on their research project. For the purpose of this discussion, we will focus on how Infoguides can be used to incorporate information literacy skills into undergraduate courses.

Infoguide Integration in IT103

For some courses, library instruction is not feasible due to time or other constraints. At GMU, IT103 – *Introduction to Computing* is one such course. IT103 is a general education requirement for all students. Students can test out of it, but the vast majority (approximately 1100 each Fall and Spring semester) take the class. Due to the large number of sections of IT103 offered (15-17 sections during fall and spring semesters), it is not possible to conduct library instruction for each.

To address the information needs of IT103 students, the library developed a course-specific infoguide for the IT103 class which was introduced in Fall Semester 2008 (Figure 1; also <http://infoguides.gmu.edu/IT103>). This was done in order to provide a tool that would help the

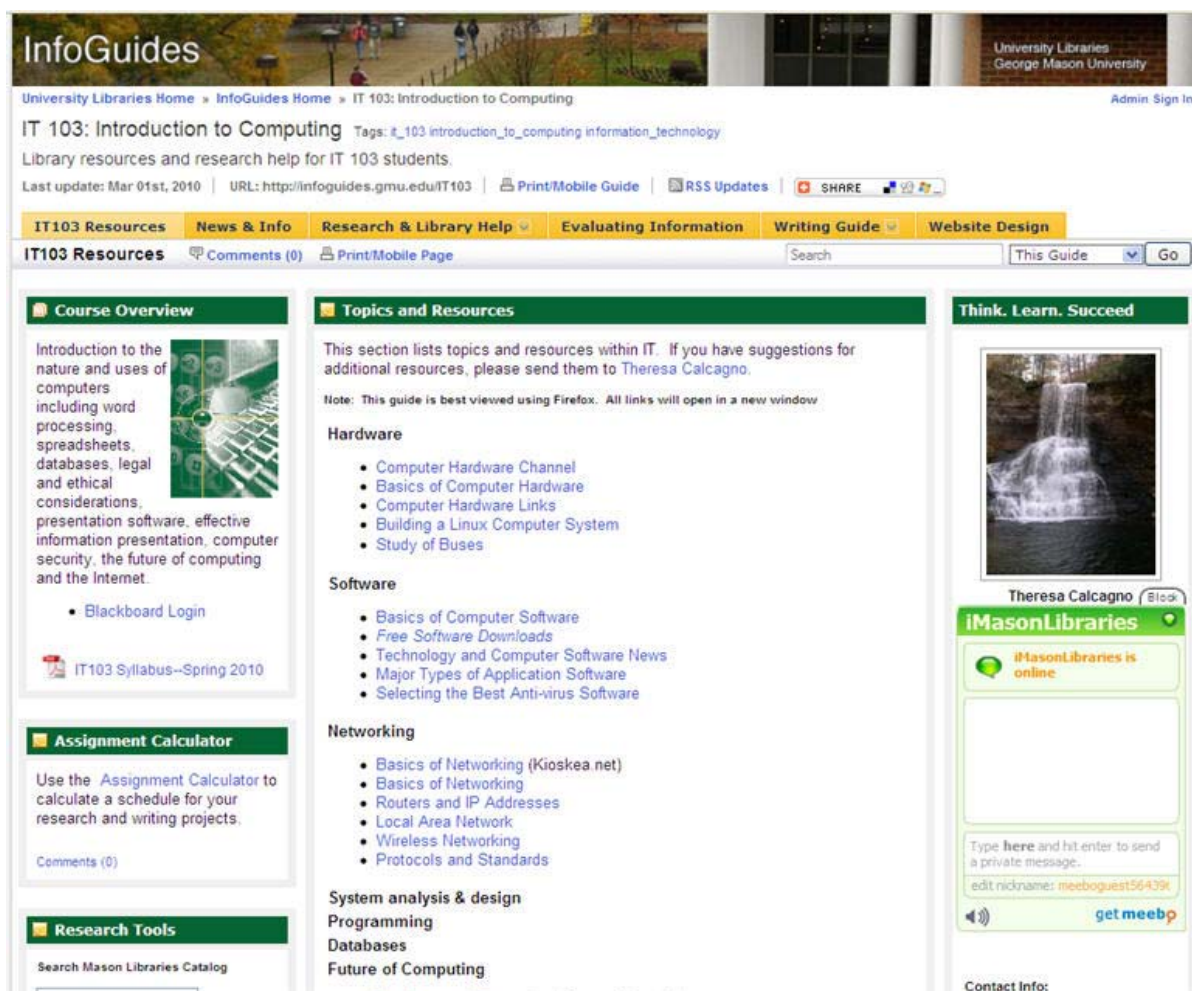


Figure 1. IT 103 InfoGuide home page.

students (mostly freshman) become familiar with the library resources at GMU. The course coordinators were enthusiastic about the project and provided input on the original versions of the guide. They also suggested additional web based resources for inclusion on the guide. The infoguide is maintained by the IT & Engineering Librarian with input from the course coordinators. This ensures that the infoguide contains updated, relevant material and that it covers the library research basics that IT103 students will need for the short papers they are required to write.

IT103 instructors have incorporated the infoguide into their classes and use it as a teaching tool. During the first two weeks, the classroom discussion includes information on library resources and research basics and students are required to review the infoguide and familiarize themselves with its content. This helps students prepare to begin researching the information needed for their research paper which is usually due by week 6. Students take a quiz after week 2 to assess their skills in finding, evaluating and citing resources. A link to the guide is provided in the course syllabus, which appears on the course and lab BlackBoard pages, making it very accessible to students. The guide also contains online resources that students can use to complete other class assignments and projects including the creation of a website.

Results

Usage statistics for the IT103 infoguide (Table 1) show that usage is high in the first half of the semester when students are conducting research for their papers, and tapers off after mid-term.

Table 1. IT 103 Infoguide Usage Statistics Fall 2008 through 2/2010 – Page Visits

Page	2008	2009	2/28/2010	Ave visits/month (8/08-2/10)
IT 103 Resources (landing page)	2103	7697	4367	745
Assignments	631	N/A	N/A	N/A
Copyright Info	241	562	334	60
Evaluating Information	N/A	2127	1473	257
Library	234	412	427	56
News & Info	105	698	543	71
Plagiarism Info	168	440	290	47
Research Help	420	2701	1695	253
Website Design	272	960	715	102
Writing Guide	761	1952	986	195
Total Page Hits	4935	17549	10830	

The average number of monthly visitors rose from 356 visitors/month in Fall 2008 to 641

visitors/month for Spring, Summer and Fall 2009. During Spring 2010, an average of 2184 visitors/month (January and February) accessed the IT103 infoguide. Since its creation, users have accessed the IT103 infoguide an average of 745 times per month. The most highly visited internal pages on the guide are consistently the pages related to research and library help, the writing guide, and evaluating information. News & Info and Website Design are also popular pages. The most frequently accessed links on the infoguide are to the GMU citation style guide, information on copyright and plagiarism, and in the past two semesters, ProQuest Research Library, one of the recommended databases on the guide.

As a result of the integration of the IT103 infoguide into the course, library staff have noticed that IT103 students who come to the library for help are better prepared and more aware of the resources that are available than students who have not been introduced to infoguides. Librarians with other subject specialties use the infoguide as a tool to help students with their research when working at the reference desk. According to one of the coordinators for the class, the instructors noticed that the quality of the research papers they receive has improved since the infoguide was developed. This has been confirmed by researchers who found that the quality of students' work improved when they used library resources to do their research [9].

Conclusion

Infoguides are an effective way to reach out to students and guide them to those library resources which are most appropriate to their research assignment. Studies show that well-used guides are those which were created in collaboration with faculty, were introduced through library instruction sessions, or were tied to a specific course [4, 10, 11]. In fact, Strutin points out that the combination of any of these attributes increases their use and effectiveness [11].

The experience at GMU reflects those same results. IT103 is a prime example but there are others. Nursing and Education are two of the infoguides that consistently fall into the top five in terms of usage. These departments request a high number of instruction sessions per semester and the liaison librarians utilize the infoguides in their classes. Smaller successes include course-specific guides for New Century College. In Fall 2009, the liaison librarian created infoguides for NCLC102, Global Networks and Communities, and NCLC275, Sustainable World, which were presented to students in library instruction sessions. Although these classes were much smaller than IT103, with approximately 130 and 25 students respectively, they received a fair number of visits. Students visited NCLC102 infoguide 799 times in the 2 months between the library instruction session and the due date for their research project. Similarly, NCLC275 students accessed their infoguide 263 times in the same time frame.

Keeping in mind the attributes of well-used guides, librarians should think about what courses or departments would benefit from an infoguide and reach out to those faculty members. Engineering faculty should consider working with librarians to develop custom tools for their research-intensive classes. As the GMU experience has shown, the infoguides are easy to create and maintain once the proper resources have been identified. In addition, simple things like introducing the infoguide in class, linking it to course web pages and syllabi or creating a simple assignment to familiarize students with the resource go a long way in developing and enhancing a student's information literacy skills.

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