Information Portals: A New Tool for Teaching Information Literacy Skills

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Abstract

Librarians at Rice and Purdue Universities created novel assignments to teach students important information literacy skills. The assignments required the students to use a third-party web site, PageFlakes and NetVibes, respectively, to create a dynamically updated portal to information they needed for their research and class projects. The use of off-the-shelf web 2.0 technology to enable students to discover the latest information in their subject areas of interest provides an engaging, hands-on environment with immediate feedback on the quality of their searching. The authors provide a basic introduction to the use of the 'portal' web site. Then, the results of using this technique, for graduate students in physics in one case and junior/senior level undergraduates in the other, are analyzed, and recommendations for the integration of this type of assignment in other courses are given.

Introduction

Information portals allow one to create dynamically updated, personalized, perhaps socially connected web pages. Platforms such as PageFlakes, NetVibes, or iGoogle
allow users/authors to drag and drop RSS feeds and other widgets onto a web page to create a startup page. PageFlakes and NetVibes also allow one to share pages with others. Information portals using these resources are not new to librarians (e.g., Gordon and Stephens 2007; Kieft-Wondergem 2008). Additionally, for example, LibGuides allow for the creation of dynamic subject pages and can accommodate many 2.0 technologies.

The authors chose PageFlakes and NetVibes for our assignments due to their convenience (students can create free accounts without providing any information other than an e-mail), the ability to share with instructors and other students, their flexibility for integrating a wide variety of widgets, and the ability to import widgets from other sources, such as Yahoo!Pipes. A recent review (Morton 2008) analyzes the merits of NetVibes, PageFlakes, iGoogle, and Live.com and found NetVibes and PageFlakes to be the best choice of platforms.

Despite the enthusiasm for librarians creating their own portals as subject guides, or as resources for instruction activities, there has been relatively little written about having students create their own portals as an information literacy activity in its own right. Pence and Pence (2008) describe a few assignments they have given in chemistry courses, but they have rigidly focused activities. For example, creating one feed from one scholarly journal, so students are all using the same resource. The output of the feeds are integrated into problem sets for the students, so there is tight reinforcement of the value of current information for students, but these kinds of assignments don't take advantage of the power of RSS feeds to aggregate and filter information and not just push tables of contents onto a web site.

Other authors (O'Connell 2008) extol the value of incorporating RSS feeds in instruction, but actual descriptions of such assignments are hard to come by. This paper, then, provides a couple of concrete examples of turning the information portal concept into a hands-on activity for students. The assignments are for different audiences, grad students in physics vs. junior level undergraduate science majors, and in different contexts, as a stand-alone assignment vs. integrated into a librarian-taught course. In this way the authors hope to show the value and flexibility of using this tool for facilitating the acquisition of information literacy skills. One could conceive of an information portal assignment like a bibliography (often a standard assignment for information literacy instruction) on steroids. It is much more engaging for students since it allows for graphical outputs rather than just text, it is manipulative, since students are dragging and dropping and continually tweaking the outputs of their filters and feeds, and it is allows for experimentation as students search the widgets to find interesting and creative functions to add to their page.

**Information Literacy Standards Addressed**

The Association of College and Research Libraries Science and Technology Section's information literacy standards (ACRL 2006) include

- Identifying information needs
- Acquiring information effectively and efficiently
- Evaluating information, including revising strategies for obtaining needed information
- Using information ethically and legally to accomplish a task
Understanding information literacy is a component of lifelong learning and recognizing the need to keep current in one's discipline.

The main value of information portal assignments is instilling an understanding of the need for lifelong learning (standard 5) as part of the professional role of scientists. Lifelong learning is a concept that is traditionally difficult to impress upon students. An information portal, however, provides real-time evidence that information is constantly changing and needs to be integrated into students' knowledge bases in order for them to remain relevant in their professions. Although the most obvious tie-in to information skills is with lifelong learning and staying current with a field, along the way students engage their other information literacy skills in the construction of their portals. In order to create effective feeds for assignments, they need to develop effective search strategies (standard 2), evaluate their results and refine their strategies (standard 3) to make sure their feeds are of good enough quality for the assignment, and there was an expectation that students incorporated the results of their feeds in their final projects (standard 4, using information). Students in the SCI 490 class were asked to describe and justify the feeds in their assignment and how they helped to address their main information needs (standard 1), so students had to think about what sources of information were appropriate to use and why the results were or weren't relevant. The instructor gave feedback and allowed students to refine and resubmit their portals, so that students struggling with one or more of the supporting information literacy skills could improve those skills.

**Case Study: Rice University**

In the spring of 2008, Dr. Lisa Spiro, Director of the Digital Media Center at Rice University and a guru in Digital Humanities, taught a class on Overcoming Information Overload. The author was heavily impressed by one tool, Pageflakes, and saw immediately its potential for organizing RSS feeds for physics students in order to facilitate them staying at the forefront of their areas of research.

In the summer of 2008, the author approached Tom Killian, a faculty member in the physics department, about using PageFlakes in the course he was teaching, PHYS 537, Methods of Experimental Physics, a four-hour two-semester course that familiarized students with basic experimental techniques common to all academic and industrial research laboratories. The course included topics such as lab safety, mechanical design, computer-based data acquisition and experimental control, laboratory electronics, vacuum technology, optics, thermal measurement and control, cryogenics, and charged particle optics. The author and Professor Killian have a long-standing common interest in scholarly communication issues and the importance of students becoming proficient and active users of the literature of physics. He was enthusiastic to use the tool in his class, stating,

"I like your emphasis from the beginning on 'resources for science research.' My concern is that we will give students the impression that YouTube and Facebook are as important as the science...I want to stay far away from that. Also, students think of research only as something they do when they need to look something up. They will need some education to the fact that research is what they do all the time - keeping up with the literature, talking to vendors, collaborating with other scientists. Can you make it clear from the outset that you are giving them a set of tools that
empress them as "researchers" in the broadest terms?"

It was stressed that information about vendors, and scientific meetings, and the journal literature are all important things to keep abreast of on an active basis, in addition to more popular and informal sources of information.

The assignment itself was introduced through a lecture by the author. The lecture, instead of using the typical PowerPoint presentation, was illustrated in PageFlakes. The assignment itself was written in PageFlakes (see Appendix 1), as was a mock-up of what the assignment should look like.

Rice University has the advantage of a very motivated and talented Collections and IT staff that were able to enhance the value of the portal assignment. Kerry Keck, AUL for Collection Development, and Denis Galvin, Fondren Libraries IT Staff, created PageFlake widgets for the Libraries' e-journal portal and library catalog. This allowed students to easily drag-and-drop those functions on their assignments. Not only did it make the assignment easier for students, so they could focus on the intellectual component of the assignment instead of the technical processes, it also reinforced for them that the library can add value to their information search process, giving the library a feeling of 'hip-ness'.

During the class lecture each required element of the portal was discussed and connected to larger issues. For example, the difference between commercial publishers and society publishers; using a tool like Scopus as opposed to accessing a single title RSS feed; ways of keeping current in general. As a quick diagnostic tool, students were asked at the beginning of class whether they had used RSS feeds, or some other mechanism such as alerts, to keep up with the journal literature. Not one student raised their hand, although after the class one student did and say that they used Google Reader, but did not know that it uses RSS feeds. With this lack of awareness shown by students, the course instructor and librarian felt that this assignment was quite valuable for the students.

Students were given one week to complete the assignment, and several consulted with the librarian, having her review their draft assignments. The author found the student assignments were well done, with even the more complicated aspects, such as setting up a Scopus feed, deftly handled. The Scopus component was the most complex because it required the student to set up an account at Scopus, set up a search, and then set up the RSS feed for their PageFlakes page. Setting up the search in Scopus was not explicitly mentioned in the class session the librarian taught. However, a number of students went beyond the single feed required and set up multiple searches in Scopus. The assignment was not only valuable for the students, in that they explored topics of interest to themselves, but the librarian also gained insight into some of the areas of physics that are of current interest in the department.

Case Study: Purdue University

In 2007, Purdue University's College of Science passed a new course of study that focused on outcomes more than simply coursework. For example, one outcome is that students need to demonstrate their ability to communicate like a scientist, which can be met through a technical writing course, by publishing a scientific paper, or presenting a poster in a professional setting. One of these new requirements is for students to
understand the impact of science on society and vice versa. "The College of Science Great Issues course addresses the impact of Science on society and the ramifications of scientific advances. The Great Issues Requirement can be met by completing the College of Science Great Issues in Science course or another course from the approved list." The College of Science sponsored a college-level course, SCI 490, as a model for this type of class. This course is targeted toward juniors and seniors, so that students have enough subject background to be able to apply their disciplinary knowledge to the course. Thus, the course was first offered in academic year 2009, when members of the incoming class of 2007 were starting their junior year. By staying involved in the discussion since the creation of this course, the author was able to integrate himself into the three-credit SCI 490 as a co-instructor with Andrew Hirsch, professor of physics, and Jane Kinkus, mathematical sciences librarian.

The course itself was modeled as a think-tank, where the 56 students were broken up into teams of three to four and asked to, ultimately, develop a white-paper and an accompanying short video proposing a policy that analyzed both scientific and social aspects of a potential solution or amelioration to an important issue facing our society, such as energy, water, population, or the environment. Although information literacy instruction was embedded throughout the course, one aspect we wanted to stress in the context of this class was the need for lifelong learning and the realization that new information is constantly being generated and needs to be integrated into ones research. Especially, in the area where politics and science overlap, familiarity with the latest headlines is important in order to maintain credibility with ones audience. Instructors reinforced the rapid developments in the 'great issues' by sharing current news articles and scientific papers with the students throughout the class.

To encourage students to be self-sufficient gleaners of recent information as well, then, the author created an information portal assignment requiring students to gather and filter RSS feeds from 'open web' sources as well as create RSS feeds of searches from journal databases and (in recognition that the latest news isn't all the news) a list of links to seminal readings on their topics (see Appendix 2). The portal also provided a structure for teams to collaborate virtually, by marking up important papers or using Facebook Wall-style widgets to communicate with each other.

In addition to 'keeping up with the field', the information portal also laid bare students' search strategies and source selection skills as well. If low-quality sources, such as non-scholarly blogs or overtly political blogs are used as input, the output will never be good. Additionally, if vague or irrelevant search terms are used, then the articles retrieved will be imprecise. Whereas, when one looks at a final bibliography for a paper and sees bad sources, one doesn't know why a student arrived at those sources. With the portal, one can see farther up the source selection process, to determine whether students were using the wrong starting point or the wrong methodology. This enables instructors to provide better guidance for students as they continue in their research process.

When introducing this assignment, the author asked students whether they were familiar with RSS feeds, and, as is typically the case among students when asked that question, almost no one knew what RSS was. When asked whether they recognized the RSS icon (under the assumption that maybe they just didn't know what the function was called), again, only a couple of students were familiar with it. This is despite the fact that the home page of Purdue University has three such icons prominently displayed in the main body of page. The bulk of the content on the Purdue home page, indeed, is
generated through RSS feeds. Most students were surprised that this function existed and were pleased to find out that it did.

**Results**

Overall, the assignment worked very well in its pilot implementation. Students had very little trouble using PageFlakes and NetVibes to populate their portals. The most difficulty was with exporting feeds from journal indexes, since each index has its own style, and unlike the open web, indexes are at different levels of development in allowing for RSS feeds. Of course, in the manner of 'digital natives', they also discovered interesting widgets to add to their portals, such as calendars to keep their groups organized and cognizant of deadlines, or to display feeds so that pictures associated with the articles appeared in the brief view on their portal. Although many portals were very well done, there were certainly several cases of students piping in feeds from inappropriate sources or not having a focused search statement (for example, a feed was included about a fringe aspect of their topic that brought in information about that aspect, almost none of which related to how that aspect affected their main topic).

In the case of the SCI 490 class, the instructors expected students to make the connection between their white paper and the information portal, by integrating some of the sources from the portal in their final papers, and although there was some evidence of that, the instructors would have liked to see more use of the portal resources. There was also no significant correlation between grades on the information portal and those on the final assignment. In future, the information portal will be better integrated into the overall flow of the course, for example, by having students take resources from their portal to use as readings for class discussions throughout the course.

That said, students were enthusiastic about having an 'interesting and engaging' assignment rather than a typical bibliography type assignment. The use of a new technology kept students interested in the process, especially in working with journal indexes to create useful ports. In the author's opinion, it is difficult to engage students in using journal indexes, since the material and cognitive demands are much higher than a generic search engine. However, by turning it almost into a game of 'how can I get good results to export to my portal', then it became an interesting challenge for students, one with immediate and manageable feedback (the articles retrieved), that students could tinker with and learn by doing in the best pedagogical sense (see, for example, Gee (2007), for a list of best practices of learning embedded in a gaming environment).

The reflection of a student in SCI 490 summarized very well what the instructors were trying accomplish with this assignment. "I really like the assignment to create the information portal using RSS feeds and other widgets. I never knew what an RSS was or what you could do with them. This kind of thing will be very useful, not only in this class, but for many other things outside of this class. In my opinion, this will be one of the most useful assignments we have had this semester. I am very likely to use this in other classes, and just in general to help collect and organize information. This kind of assignment has a practical value that makes me excited to use this new knowledge."

The ancillary goal of providing students with tools to work more effectively in teams...
was best summarized in one of the student reflections, "I've been working on the science portal assignment. I think that it is a pretty good way to gather information in a central location. It makes it very easy for all our group members to see the information without tons of emails."

With respect to the graduate PHYS 537 course, the student feedback was overwhelmingly positive, perhaps indicating that beginning graduate students see the importance of staying up to date in their fields, since this is the time that they are becoming professionals in those fields. In a survey conducted in the following semester, in the class of eleven students, everyone agreed that information overload was a concern that they needed help with. Only one person had used RSS feeds prior to this class, and only three students had used saved searches on publisher web sites to automate their literature searching. With regard to the actual course assignment, seven students responded that PageFlakes was a 'very useful' way to organize their research, with the other students indicating it was 'useful' or 'somewhat useful'. One comment indicated that 'it saves me a lot of time every day.' In perhaps the most important aspect, in terms of transferability of the assignment to future work, one of the holy grails of education, nine out of the eleven students indicated that they had used the portal after the class was over, and ten out of eleven indicated they were planning on using their site in the future.

**Recommendations**

Information portals for scientific information can be valuable, engaging, tools to reinforce many information literacy goals, from source selection, creation of effective search strategies, evaluation of results, and better understanding of the information cycle in a student's discipline. PageFlakes and NetVibes provide flexible, easy-to-use platforms for creating information portals. We found students are quite comfortable working with these 2.0 tools and they appreciate the chance to create dynamic, graphically intense resources that can be shared with group members and classmates. We found that an information portal assignment was especially well received by beginning graduate students, who are being asked to engage with their professional literature, often for the first time, but that it is also an appropriate tool for undergraduates to use as well.

The authors stress that, even though information portals seem like 'information technology' and thus students probably already know about them, in fact the level of awareness of RSS feeds and alerts is very low among undergraduates and even graduate students. We encourage librarians to think about integrating information portal-type assignments in their own instruction opportunities.

**Bibliography**


Gee, James Paul. 2007. What video games have to teach us about learning and
literacy. New York: Palgrave Macmillan.


### Appendix 1

[**Rice University Pageflake Assignment**](http://www.istl.org/10-winter/refereed1.html)

### Appendix 2

[**Purdue University Information Portal Assignment**](http://www.istl.org/10-winter/refereed1.html)