

# **Implementation of library 2.0 services in Engineering Education through Integrated Learning Initiative at Queen's University**

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## Abstract

Web 2.0 applications in education, driven by a combination of technological improvements and social pressure, have increasingly grown in the recent years. Web 2.0 applications would have a remarkable positive impact on students learning experience through new tools such as Instant Messaging, RSS, social networking tools (blogging, wikis.. ), and others.

Queen's University Engineering and Science Library has been exploring possible library 2.0 services and has started implementing them in a partnership with the Faculty of applied science through the Integrated Learning Initiative by introducing those new modules within first year's engineering program, Engineering Communications, and Engineering design courses.

The paper will introduce Integrated Learning Initiative, the current opportunities the library has with the faculty, successful implementation of subject/ course guides using XML/RSS feeds, and involvement of the library in the development of the Applied Science portal using web 2.0 applications.

## Introduction

Web 2.0 is often defined through the technologies that constitute it such as social software, wikis, blogs, podcasts, RSS feeds, and Web services and it is hard to get a specific definition for what's meant by Web 2.0 an defining a hard boundary for Web 2.0, but rather defining a gravitational core for those services and their outputs<sup>1</sup>. The core of Web 2.0 technologies relies on how they transform the web into a space where everyone can create and share information collaboratively in a flexible, dynamic and adaptable way.

## Library 2.0 applications at Queen's University Library

Queen's University Library has been exploring the possible implementation of web 2.0 applications in library services; the library had formed working groups and functional teams that explored different aspect of developing library services and increasing access to library resources.<sup>2</sup>

The implementation of web 2.0 services can be interpreted through a model that Karen A. Coombs at the University of Houston Libraries in Texas had introduced as a model for six pillars of Web 2.0 that would affect library web services design; the six pillars are shown in Table 1.

**Table 1- Six pillars of web 2.0 applications in library services<sup>3</sup>**

Six Pillars of Library 2.0 applications	
1. Radical decentralization	4. Remixable content
2. Small pieces loosely joined	5. User as contributor
3. Perpetual beta	6. Rich user experience

Queen's University library had evaluated different possible content management systems (CMS) to provide decentralizing control of the content and using wikis as a communications media among functional teams and working groups, wikis and blogs were found to be an excellent opportunity for library staff to get acquainted with creating content.

One of the recent programs was to train library staff on web2.0 applications; the QUL Learning 2.0 Program was an 8-week voluntary online learning program that explored emerging web-based technologies. All library staff were invited to participate and given time to do the program during working hours. 53 library staff had finished the training where they used wikis, blogs, Facebook, RSS feeds and Google Docs.

#### Information Literacy through Queen's University integrated learning initiative

The integrated learning initiative at Queen's applied science has initiated in mid 90's to prepare graduates for increasingly rigorous expectations, including a shorter learning curve for achieving professional competence, enhanced professional skills, in addition to a strong foundation in theory, the ability to work with, and learn from, engineers in other disciplines and other fields such as business and economics, awareness of the societal impact of engineering activities, and lifelong learning skills.<sup>4</sup>

The Association of College and Research Libraries (ACRL) defined Information Literacy as "a set of abilities requiring individuals to recognize when information is needed and then have the ability to locate, evaluate, and use effectively the needed information"<sup>5</sup>; Information literacy has been included within the applied science courses to meet the Canadian Engineering Accreditation Board (CEAB) requirement for teaching lifelong learning skill through the curriculum as per clause 2.1.1 "The criteria are intended to identify those programs that develop an individual's ability to use appropriate knowledge and information to convert, utilize and manage resources optimally through effective analysis, interpretation and decision-making. This ability is essential to the design process that characterizes the practice of engineering".<sup>6</sup>

Information literacy sessions have been planned not to be a separate entity of most courses but they were infused and integrated with regular course work. IL sessions are used to be a core requirement for first year engineering project course, engineering communication, and engineering design courses. These sessions help to introduce new web 2.0 related technologies such as RSS, blogging, wikis, and tagging and how to use those services to be kept updated with new resources for their research or their design project. Also there is an assigned librarian as "Integrated Learning Librarian" to provide in-site reference and information at the building of the integrated learning centre to increase direct contact with applied science students, faculty and

staff, the library is presented within the faculty first year studies working group and in other ad-hoc committees.

## Queen's University Applied Science's Portal

The portal is the Faculty of Applied Science's "web 2.0" communication tool for faculty, staff, and students. It is a whole new way for the faculty to deliver content to users, allowing them to have a completely customizable web experience, with most of the tools they need in one convenient place. The portal was written using PHP and MySQL, and utilizes AJAX technologies (PHP and JavaScript) to create an interactive and auto-refreshing interface. The portal has been developed with input from students, faculty, and staff, incorporating the best elements of current users experience with common websites as Google and social networking website such as Facebook.

As users log in with their user ID's, the portal presents content in a personalized way, for example when a first year student logs in, the default widgets will be the first year assigned courses, guides, library resources .etc, the same for faculty and staff. The flexibility of the design makes it easy to target users (even on the individual level), department, program and groups with their resources.

The screenshot shows the 'Applied Science TEST Portal' interface. On the left, there are several widgets: 'My Home' with 'My Links' (Google, ILC Room Booking, Customize Page, Logout); 'Today's Comics' with 'Elbert', 'Mother Goose and Grimm', and 'Ziggy'; and 'Queen's News' with various news items. The main content area displays search results for 'business law', listing journals like 'American business law journal', 'Asper review of international business and trade law', 'Australian business law review', 'Berkeley business law journal', 'Business law international', and 'Business law journal'. Below the search results is 'The Wall' with user posts and 'eJournals' with search and browse options. Annotations with red arrows point to the 'My Links' widget, the 'Queen's News' widget, and the 'eJournals' search widget.

This area displays the results of any query run through widgets; the purpose is to keep the user within the portal and not leaving the website

The wall looks like Facebook wall, course, library and personal walls are available

This widget is to search e-journals and browse the subject guides from the library

Figure 1- A sample screen of the applied science portal with pre-selected widgets

The main portal design objective is to make it a personal space for users where they can customize most of it except for a small area that the users cannot modify which is used for

important academic messages and information, ensuring that users will not miss pertinent information for their courses.

A web widget is a portable code that can be installed and executed within any separate HTML based web page by an end user without requiring additional compilation. Nowadays other terms are commonly used to describe a web widget including: gadget, badge, module, capsule, snippet, mini and flake.

### Library presence within the applied science portal

The library has been involved with the portal development team to ensure access to library resources within the portal space. There are a few "public" widgets that a user can add in to their portal. An example is a "Wall" widget, very much like the Facebook wall. It allows users to share this wall - a place for users to post messages - with their friends, to create a single spot for interaction. There are also "Course Walls", giving instructors and students a single place to post messages. The followings are some examples of current implementations of library widgets within the portal:

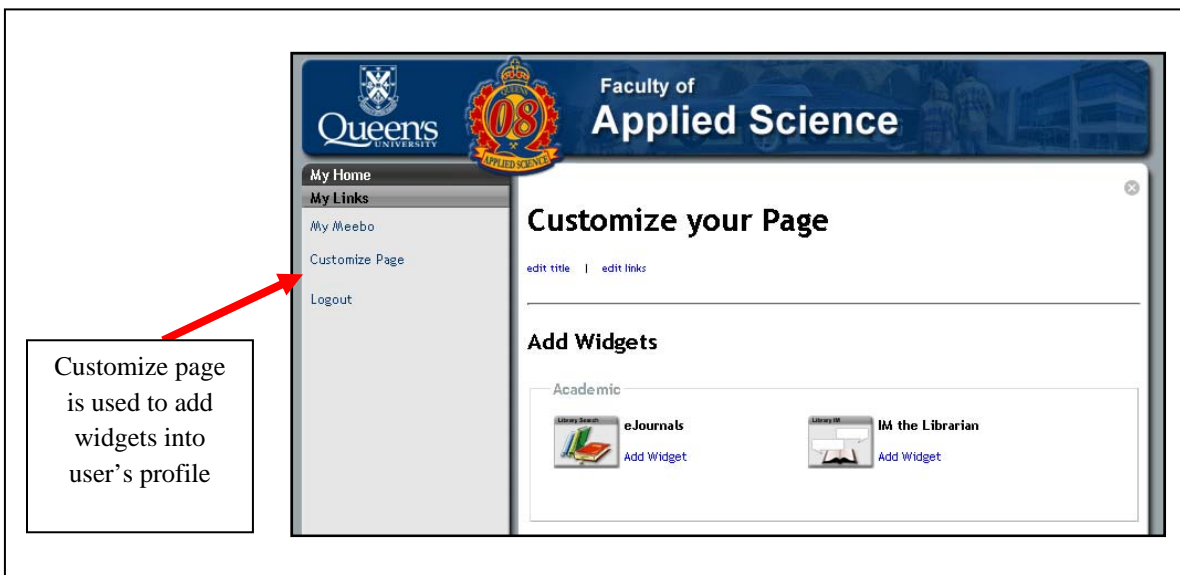


Figure 2- Customize page is used to add/remove widget within the user profile

Instant Messaging: Queen's University Engineering and Science Library has been using instant messaging (IM) as a part of reference services, the library has been using AIM, yahoo and MSN accounts, the library has been using Trillian software as a single point of contact using the three different IM addresses. The library has developed a widget using Meebo application for instant messaging and it had been added to the applied science portal. It has been difficult to use an additional interface to manage instant messages. Trillian does not support Meebo widget messages so a decision to replace it with Pidgin software which has the advantage of being an open source software that was customized to accept Meebo widget messages in addition to the other messages originating from other different chat clients.

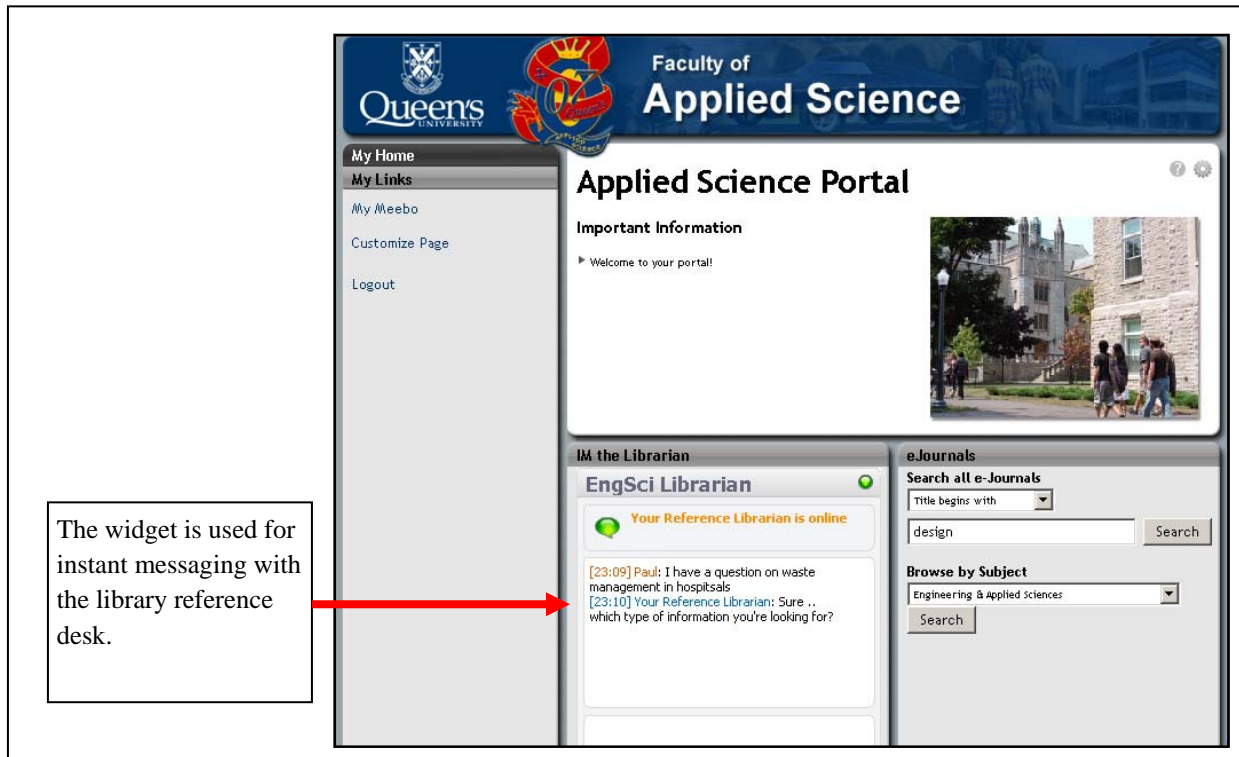


Figure 3- A widget is used to instant message the library reference desk through the portal

**RSS Feed:** The portal has widgets for the library catalogue, e-journals, library news, and library new items. In recent Information Literacy sessions, students were introduced to RSS by creating an RSS feed for the result they would have at some of the Engineering databases (Compendex, Inspec, or IEEE for example) and then use the RSS widget at the portal so they can read the updated about their search keywords through the home page of their portal. In Engineering design courses, students were given the time during the IL session to learn about searching some databases, creating an RSS feed and using the portal widget of RSS reader.

**Discussion walls:** The portal provides users with walls in a similar way to Facebook walls where users discuss and send comments; there are course walls that will be a part of the user profile depending on the registered courses. Users also have the flexibility to create their own walls and invite specific people for those walls. The library had found this is a good opportunity to be included in course discussion; librarians are included as users to those course walls depending on their subject speciality, for example the Civil Engineering subject librarian will be added automatically as a user to all of course walls whose code starts with "CIVL", in addition to have a special wall for the Integrated Learning librarian where postings about engineering design, news about new resources and other library related issues can be shared with students, faculty, and staff.

**Subject guides:** The library had developed subject and course guides using Drupal software as an open source content management system, so corresponding widgets will be a part of each student profile at the applied science portal depending on departments and registered courses. First year students find course guides as a helpful tool to guide them through using different

databases and also providing information about writing, citation and academic integrity resources.

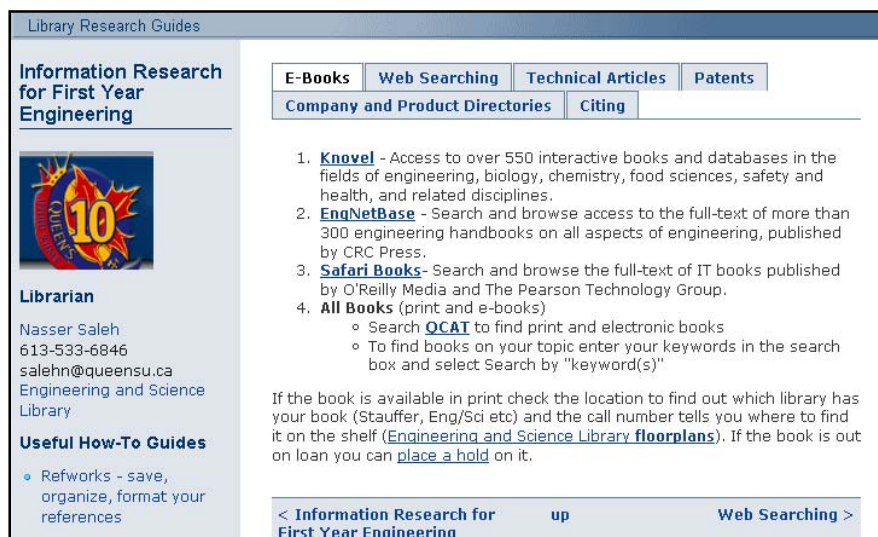


Figure 4- A widget for library research guide, an example for first year Engineering guide

## Conclusion

The applied science portal at Queen's is a clear example of recent web development in both of Education and Library web services; the flexibility of its design of the portal had made it easy to add any future web component (widgets).

The six pillars model of web 2.0 services has been found to be applicable through the applied science portal design, development and implementation. The portal itself consists of "small pieces loosely joined" which are the web widgets with the possibility to display different formats of content including multimedia files, some of the portal's widgets has been developed as a perpetual beta versions and being introduced for testing and for feedback from users and testing, for example the instant messaging widget had been introduced my Meebo then by AIM WIMZI widget for testing, the current development of the library content management system will make it easy to add any application programming interface (API) to create "remixable content" that can be used not only in the applied science portal but also in other websites including Facebook and other social networking website, the introduction of walls encourage "users as contributors" whether they're students, faculty and staff and gives an excellent space for the specialist librarians to be approached and giving helpful hints within both of the course and the librarian walls giving "rich user experience" for more online participation and collaboration using the flexibility of AJAX in creating personalized and customized contents.

The personalized and customized profile for each user requires that the both of library and the faculty of applied science to identify the common custom fields for the common content types that will be added depending on the user profile.

The current successful implementation of some library widgets at the applied science portal has provided more opportunities for other library services application to be introduced and used by applied science portal users in the near future.

## References

1. T. O'Reilly, (2005). "What is Web 2.0". [Online]. Available at: <http://www.oreilly.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html> . [Accessed: Oct. 1, 2007]
2. Queen's University Library. (2006). *Catalyst for Discovery: A Three-Year Strategic Plan for Queen's University Library*. [Online]. Available: <http://library.queensu.ca/stratplan/2006-2008/2006-2008QULStrategicPlan.pdf>. [Accessed: Oct. 1, 2007]
3. K. A. Coombs , Building a library Web site on the pillars of Web 2.0. *Computers in Libraries*. Vol. 27, no.1, pp. 16-20, Jan. 2007
4. Integrated Learning at Queen's.(2007). *Faculty of Applied Science at Queen's University*. [Online]. Available: <http://appsoci.queensu.ca/ilc/learning/>. [Accessed: Oct. 1, 2007]
5. Association of College and Research Libraries (ACRL), *Information Literacy Standards for Science and Engineering Technology* [Online]. Available: <http://www.ala.org/ala/acrl/acrlstandards/infolitscitech.htm> . [Accessed: Sep. 26, 2007]
6. Accreditation Criteria and Procedures (2006). *Canadian Engineering Accreditation Board (CEAB)*, Ottawa, ON [Online] Available: [http://www.engineerscanada.ca/e/files/report\\_ceab.pdf](http://www.engineerscanada.ca/e/files/report_ceab.pdf) . . [Accessed: Oct. 1, 2007]

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