Delicious Subject Guides: Maintaining Subject Guides Using a Social Bookmarking Site

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Abstract

By using Web 2.0 social bookmarking sites, libraries can more easily manage subject guides and other lists of Web resources. Social bookmarking services such as Delicious provide a one-click method to bookmark a Web site, allowing librarians to describe and categorize Web sites. Using a small amount of JavaScript, these bookmarked resources can be dynamically included in subject guides and other Web-based library resources.

This paper describes and analyses the use of social bookmarking at a medium-sized, comprehensive college library for the creation and maintenance of modern languages subject guides. A brief technical description outlining necessary JavaScript code provides a way for librarians to try this idea elsewhere.

Keywords: subject guides, Delicious, Library 2.0, social bookmarking, tagging, social software

Introduction

Web 2.0 is one way that librarians can provide dynamic and up-to-date information through the library’s Web portal. Web 2.0 can be characterized as online software with a low barrier to utilization that is easily personalizable (Corrado and Robertson 3). These aspects of Web 2.0 lend themselves to social uses, and social software such as social bookmarking sites, blogs, wikis, and others have become ubiquitous on the Web (Beer and Burrows). When applied to libraries, Web 2.0 technologies tend to be termed “Library 2.0” (Miller). Millennials, many of whom are our current or future students, are already using these technologies (Elliott 7). The ease of use, personalizibility, and socialness of Web 2.0 software can be adapted for Millennial users in academic libraries. Millennials are a generation of 76 million people born between 1979 and 2000. One of the defining characteristics of Millennials, also know as “‘Net Generation,’ ‘Generation Y,’ or ‘Echo Boomers’” (Connaway et al. 7) is that they are “digital natives” (Prensky 1). They have grown up in a digital environment and are as comfortable in the online world as they are in the offline world.

Subject guides can be described as maps to library resources that fulfill the role of “an
information locator for the library user whose search for recorded materials on a subject of interest is just beginning" (Stevens, Canfield, and Gardner 41). Standard resources like online subject guides can be helpful for students, as these guides target the specific information need of the student by providing references to quality resources. Furthermore, since subject guides are available in the online environment, they are available to students 24/7, on their own terms. While not all content necessary for research is online, many interesting and worthwhile resources are available. Through the use of subject guides, it is possible to link directly to online information that has been vetted by subject specialists at the library.

While students generally describe subject guides as either "very useful" or "somewhat useful" (Staley 130) the work of creating and maintaining static Web-based subject guides "has been time-consuming" (Corrado and Frederick ¶1). Librarians at a medium-sized academic library solved problems of currency for their modern languages subject guides while appealing to users’ interest in new technologies. A social bookmarking site was identified as a way to organize and store URLs for resources that would be part of the subject guides. The site that began as “del.icio.us” and that is now simply known as “Delicious” (without the interspersed punctuation) is free to use for individuals and institutions alike, and only requires the registration of an account. Due to the social nature of Delicious, it is a good tool for identifying and organizing online resources, for annotating them, and for making them available to Web-savvy users. This paper will explore the rationale for the project, describe the methods used, and show the end results. Ideas for the extension of this project and similar projects being carried out at other academic libraries are also discussed.

**Project Rationale**

The OCLC Perceptions report showed the libraries are viewed “as more trustworthy/credible and as providing more accurate information than search engines" (De Rosa, et al. Perceptions 2-18). However, only two percent of college students begin their information searches from the library Web site. Instead, eighty-four percent of college students, and eighty-nine percent of the general population, begin their information searches with Internet search engines (De Rosa, et al. College 1-7). Part of the reason is that library Web sites are perceived to be less convenient and more difficult to use than Internet search engines (De Rosa, et al. Perceptions 2-18) and some students believe that the library’s collections and information are not always current. (De Rosa, et al. College 3-17, 4-6).

Despite using Internet search engines as a first place to go for information, previous research has shown that many users become frustrated by the large number of hits and
are “not likely to go beyond the top twenty to thirty documents [returned by a search engine] before getting bored or frustrated” and quitting their search (Turetken and Sharda 273). Between the high perception of trustworthiness and accuracy of library resources, and the frustration with Internet search engines lies an opportunity for librarians to help guide students in their research. Since it is impossible to give one-on-one service to every student who would benefit from it, librarians need to provide this type of service using alternative methods that meet user needs.

One way librarians attempt to provide direction to researchers is by creating and maintaining subject guides. These guides, which are now often online, are also known by other names such as pathfinders, Webliographies and research guides. Subject guides were first introduced into libraries in the 1950s (Vileno 434) and are viewed by academic librarians as “a critical resource in helping students get started on their research in a particular area” (Staley 119). Although students often begin their information searches with Internet search engines, a recent EDUCAUSE survey of over 27,000 students found that “[a]lmost all students (more than 90%) use the college or university library website” (Salaway, Caruso, and Nelson 39). In order for these guides to remain useful in the age of Google, they must be updated on a regular basis.

The College of New Jersey (TCNJ) is a four-year comprehensive college that is highly selective in terms of students admitted. The Library at TCNJ is a medium-sized academic library in the heart of campus that sees a good deal of walk-in business during open hours. The principal users of the library are undergraduate students who are Millennials; they are at ease with Web technologies. Like librarians at other academic libraries, to meet remote needs of users, librarians at TCNJ create and maintain subject guides for the academic departments for which they are liaisons. These pages have been created using Adobe Contribute software and are coded in static HTML. Each change requires a somewhat clunky login to the software, and a manual change to the posted HTML code. While useful and popular, as others have noted (Dupuis, Ryan, and Steeves 271) static HTML-based subject guides have proven to be time consuming and awkward to maintain. In this instance, special software needs to be installed on computers to access the Web site’s content management system, meaning that librarians at this college can only maintain the guides using their office computer. The software is difficult to use and has a steep learning curve, creating technical obstacles for some librarians. Librarians would sometimes ask the campus Web designer for help in maintaining these guides, but he is responsible for all of the Web sites at the college and cannot always make the subject guides a top priority. Instead of the subject guides being updated instantly when a subject specialist identified an appropriate resource, resources would be manually added to a librarian’s personal list and saved for later. In these instances, only once there was a critical mass of
resources, would the guides be updated. What was needed was a quick and easy way to add Web resources to subject guides from anywhere, at any time. Additionally because of tight budgets, any project being proposed would need to be a low- or no-cost solution.

Some librarians were using the social bookmarking service Delicious to collect lists of Web resources that they would later include in subject guides, use during bibliographic instruction sessions, or use for their own research. Social bookmarking services allow users “to post an article or Web page with a single click to a personal Web collection” (“Join” 1066) and group them using keyword tags. These services are considered social because bookmarks and tags can easily be shared with others. Since librarians have been using Delicious since 2006, the systems librarian began investigating ways to automatically incorporate this information into subject guides. Since that time, the North Metro Technical College Library (Stirk 7), Health Sciences Libraries at the University of Michigan (Anderson), Thomas Ford Library, and other libraries have described using Delicious to collect bookmarks to share with patrons (Etches-Johnson 57). Other libraries have used other social bookmarking Web sites to accomplish similar tasks. For example, the librarians at Mohawk College of Applied Arts and Technology use LookSmart’s Furl to maintain a database of hand selected Web sites (Horwath). While other libraries had been using Delicious and other social bookmarking Web sites, this project differs from many of them because it embedded the bookmarked sites into a subject guide based on tags rather than linking to the list of Web sites on the social bookmarking Web site.

The systems librarian had already been successfully using RSS to embed feeds of new monographic acquisitions into the course management system and into subject guides (Corrado and Moulaison 7) and it was believed that a similar method should be utilized for resources bookmarked in Delicious. While it is possible to retrieve a list of items that were tagged in Delicious by a particular user with specific tags using RSS, it was decided to use a combination of JavaScript and Delicious’s implementation of JSON (JavaScript Object Notation) to accomplish this task instead. “JSON, is a lightweight data-interchange format [that] is easy for humans to read and write [and] for machines to parse and generate” (“Introducing JSON”). JavaScript can be embedded into the HTML of a Web page to dynamically display data that is made available in the JSON format. Because Delicious provides the base JavaScript code and makes the data available in JSON format, it is not necessary to be knowledgeable about either of these technologies to dynamically include bookmarks tagged in Delicious on a Web page.

**Project Description**
To evaluate the concept of using Delicious to maintain subject guides, a subset of the guides were chosen to be converted into Delicious subject guides. The first guides to be migrated were the modern languages subject guides. The modern languages subject guides were chosen because the librarian responsible for them was looking for ways to overhaul the guides, and was already familiar with Delicious.

Once the subject librarian identified a Web-based resource to include in a subject guide, she simply clicked on a bookmarklet installed in her Web browser. This bookmarklet launched a pop-up window that allowed the resource to be tagged in Delicious. The URL and title of the page were already filled out in the pop-up window, leaving the librarian to create the appropriate tags and an optional resource description. In order for the resource to be displayed in the subject guide, the librarian would have to choose from a set of tags that she predetermined and had previously been coded into the subject guide. Typically, at TCNJ, multiple two-tag combinations were utilized. The first tag being the subject, and the second tag relating to the topic of the particular resource within that subject. For example, if the modern languages librarian wanted a resource to display in the culture section of the Spanish subject guide, she would apply the Spanish and culture tags to the item. Figure 1 shows the pop-up window the bookmarklet launched when tagging a Web page.
Figure 1: Tagging a Spanish poetry Web site.

If the librarian wanted this resource to appear in multiple guides, additional tags could be applied. For instance, if the item was tagged with Spanish, French, and culture, the resource would appear in the culture section of both the Spanish and French subject guides. The bookmarklet can easily be installed on any browser from the Delicious Web site, so librarians can add items from anywhere they have an Internet connection. Even without the bookmarklet installed, resources can be bookmarked using the Delicious Web site.

Resources that can be tagged include Web pages, bibliographic records in the library catalog, and articles from databases (in order for articles and bibliographic records to display, a persistent, or permanent, URL must be tagged). The Delicious description field is used for the name, or title, of the link and the notes field can be used to supply additional information about a resource. The process of bookmarking a resource (and adding it to one or more subject guides), once identified, takes only seconds – a significant time saver over the previous method. Furthermore, there was no longer a need to open the Web-authoring software that had previously been used for edits. This
allows librarians to update the subject guides from anywhere with an Internet connection.

**Technical Information**

Once a subject librarian bookmarks a resource on Delicious with the appropriate tags, the title and additional information about the resource provided by the librarian will automatically display in the appropriate subject guide. A short snippet of JavaScript, provided by Delicious ([http://delicious.com/help/linkrolls](http://delicious.com/help/linkrolls)), needs to be inserted into the HTML of the library Web page to enable this functionality. Figure 2 shows a portion of a subject guide that automatically incorporates items tagged in Delicious. For an example of the code to include in a Web page to display the last twenty items bookmarked on Delicious by the user “Librarian”, see Appendix A.

![Figure 2: Portion of French Studies subject guide. French dictionaries bookmarked by the Modern Languages Librarian in Delicious are automatically retrieved and displayed in the French studies guide](http://www.tcnj.edu/~library/moulaison/FrenchStudies.htm)

It is only possible to include bookmarks in a subject guide when a librarian has included one or more tags associated with one or more guides. For example, the following URL embedded in the JavaScript will return all files that user “tcnjml” has tagged with both **French** and **Dictionaries**:

```
<script type="text/javascript"
```
The tools provided by Delicious allow non-tech-savvy users to easily choose from a few basic layout options. Those familiar with Cascading Style Sheets (CSS) can use CSS to change the look and feel of how the links are displayed. This technique is used to change the background color and create a border for the tagged items on the subject guides. A sample of the CSS code used in these examples is available in Appendix B.

The modern languages librarian also opted to include tag clouds in some subject guides. A tag cloud is a visual depiction of a set of tags, with tags that are used more often displayed in a larger font. By clicking on a tag in the tag cloud, library users are taken to the Delicious account where they can see all resources bearing that tag. As with the lists of tagged items, the tag cloud appears by cutting and pasting a small amount of JavaScript supplied by Delicious on their tag rolls tool page into the subject guides (see Figure 3).

![Figure 3: Tag Roll Tool. The tagrolls Web page (http://delicious/help/tagrolls) creates the JavaScript a user needs to include a tag cloud as part of a Web page. The user simply has to cut-and-paste the code inside the top box into their Web page.](http://del.icio.us/feeds/js/tcnjml/French+Dictionaries?extended;count=100;title=French%20Dictionaries;sort=alpha;icon=s)
A potential issue with using JavaScript to dynamically include content is that visitors to the library Web site may have JavaScript turned off in their browser and will not see the lists of items. This is not as big a concern as it may have been in the past because the number of users that turn JavaScript off is minimal. In November 2008 over 98.2% of TCNJ Web site visitors had JavaScript enabled. While the number of users that do not use JavaScript is minimal, we do not wish to exclude any user. This issue is easily addressed by including the HTML noscript element which allows Web authors to provide alternate content when a script is not executed. In the case of these subject guides, a hyperlink to the Web page on Delicious that lists the resources that the librarian has tagged with a specific tag is displayed. For example,

```html
<noscript><a href="http://del.icio.us/tcnjml/French+culture">French Cultural Resources</a></noscript>
```

is used to display a hyperlink to resources tagged with *French* and *culture* by the Delicious user “tcnjml.” An added reason for including the noscript tag is because some screen readers used by the visually impaired may have difficulty reading the links dynamically included by JavaScript.

Once the systems librarian has learned how to embed the items bookmarked in Delicious into a subject guide, creating new guides or new categories within a guide only takes a few minutes. The systems librarian only has to cut and paste the code from another guide and then modify the code to include different tags. The initial process of learning how to embed the items bookmarked in Delicious into the subject guides took an estimated five hours. This includes creating the customized CSS. When a librarian wants to convert a guide, the systems librarian and subject librarian meet for about an hour to discuss the tags that the subject librarian wants to use and, if necessary, show the librarian how to use Delicious.

The systems librarian had originally approached one subject librarian about working through a pilot project with her subject guides. The subject librarian found that maintaining the Delicious subject guides took less time than using the Web authoring software. Adding a resource took less than a minute. At one point, the subject librarian reportedly was abroad at a conference and heard about a good and relevant Web site. She returned to her hotel room and instantly added the site to the subject guide by visiting the site, assessing it from her hotel room, and tagging it appropriately in Delicious. She was able to verify later in the day that the resource had been added to the Web page.

The initial conversion of standard Web subject guides to Delicious-enabled guides required the subject librarian to bookmark each resource in Delicious and cut and paste the descriptions. Because it was necessary to check for dead links and to confirm that the Web pages linked to from the guides were still appropriate, the process was not overly cumbersome. The time needed to convert pages to Delicious also depended on how many resources were on the subject guide and if the librarian was taking the
opportunity to [re]-evaluate resources at the same time. If the librarian only converts the guides, it is estimated that it would take less than a minute per resource. In the case of the modern languages guides that were the first to be modified, links into the OPAC were also tagged, leading at times to several minutes per monographic or periodical library resource.

**Reaction**

Since the various subject guides that incorporate Delicious bookmarks had their content significantly overhauled at the same time as the migration, it was not possible to compare Web server statistics from previous years. Also, as Staley observed, Web log statistics for subject guides are at best “vague indicators of use since it is uncertain whether the total number of hits reflects student’s or librarian’s use” (119). With that cautionary tale in mind, the statistics relating to the number of hits for the Delicious subject guides match up quite favorably compared to other guides. The second most accessed subject guide during the first two months of the Fall 2007 semester (when the Delicious guides were first introduced) was the Italian language subject guide. This has continued with the Italian language and French language subject guides being the two most popular subject guides in October 2008, according to Web site statistics. These statistics are impressive considering that the college does not have either an Italian or French major. Because of concurrent Web redesign projects, librarians were preparing a comprehensive study of subject guides in general. This study would include focus groups and surveys to more thoroughly investigate what students want and need from these guides, but results of the study were not available for this paper.

The response received during informal conversations with teaching faculty about the Delicious enabled subject guides has been favorable. Not only do they like the look and feel, but they have also responded positively to the constantly evolving nature of these guides. They have also informally expressed their appreciation that librarians are able to add resources in a timely manor. When a faculty member e-mails a resource to the librarian, the librarian can have it appear in the subject guide, literally, within a minute of opening the e-mail. One professor of basic French is including the content of the subject guides on his class pages in the college’s Course Management System. The professor also thinks that these guides are good for Millennial students.

The reaction from the librarian maintaining the Delicious enabled subject guides was equally positive. She and other subject librarians believe that the Delicious enabled guides are easier to keep up to date, and they like being able to add resources from anywhere just by opening their Web browser. Library management was supportive of this project and encouraged its continuation as a result of the positive feedback and its low cost (the only cost being minimal staff time). While management appreciated the time-saving aspects, they were even more pleased that the Delicious subject guides are being updated regularly. While participation in the Delicious subject guides project is up to the individual librarian, the librarians that began the project are pleased that at least
three additional librarians at TCNJ have expressed interest in having their subject
guides updated to automatically include Web resources tagged in Delicious. Because of
staff changes (neither the systems librarian or the modern languages librarian still work
at the college) the process of migrating other guides has been put on hiatus. However
the authors are hopeful that with new staffing the project will be revived shortly.

**Recommendations and Conclusions**

Using Delicious and JavaScript to include Web resources in library subject guides has
proven effective. Because JavaScript and the underlying JSON feeds can be used “to
fetch, remix, and mashup a variety of data for use in your own custom applications and
browser-based presentation styles” (“delicious/help/json”) the content can be used in
other applications and on additional Web sites. Including tagged Web resources in the
College’s course management system which “will seamlessly direct students to quality
Internet resources” from class pages (Moulaison and Corrado 165) is another
possibility.

Using JavaScript to dynamically include content from Delicious can increase page load
times. The content needs to be retrieved from Delicious and formatted on the fly.
 Normally when only a few feeds are used on a Web page it is not an issue but
sometimes the response time from Delicious is less than ideal. The response time from
Delicious can vary significantly but it becomes more apparent when multiple feeds are
added to a single guide and during peak network usage times. For this reason,
alternative methods of including the content tagged in Delicious are being explored.
One possibility is to cache the feeds locally. During preliminary testing, this appeared to
be effective for in-library and other on-campus users, but it is not clear that this is an
improvement for off-campus users. One downside of local caching is that it prevents the
instantaneous updating of subject guides. While the cache can be updated frequently
and thus is not an issue for library patrons, it would still mean that librarians would not
be able to check the display of new, edited, or removed resources immediately. One
benefit of local caching would be that if the Delicious Web site became temporarily
unavailable, users of the guides would still be able to access the bookmarked
resources. Additionally, the local cache would automatically be backed up nightly when
the Web server is backed up. If Delicious, or the Delicious account, ever became
permanently unavailable, the library would have a copy of the data.

A future project for TCNJ is to implement a program that will automatically check the
hyperlinks to Web resources bookmarked using Delicious to make sure they are still
valid. If they are not valid, an e-mail can be sent to the subject librarian warning him or
her that the resource is unavailable. The librarian can then check the link and decide if
this was a temporary failure or if the resource needs to be removed or updated. This
could also be accomplished by Delicious implementing a hyperlink checking feature.

One of the main characteristics of Web 2.0 according to Horwath is that “the user (as
well as the author) can create content.” Only subject librarians are tagging content to be
included in subject guides at this point. It would be possible to make available a portion of the subject guides for students and faculty to tag content that they believe is appropriate. By having patrons include a specific tag in their postings relating to a subject, the library can automatically include those resources in a guide. This would allow Millennials and other users to participate in the creation of subject guides by identifying and adding content to the subject guides. Almost 17% of students regularly use social bookmarking sites so this would not be a foreign concept to many library patrons (Salaway, Carusom and Nelson 47). Since this will be un-mediated content, it may be a good idea to do this as a separate Web page, making sure that appropriate disclaimers are put into place to inform users that the library has no direct control over these resources. An alternative approach would be to provide instructions on how to suggest a resource to be included in the subject guides, by sending a link using the Delicious interface directly to the subject librarian, or to have librarians “approve” each suggestion before it is included in the library’s page.

The distributed nature of the Internet also leads to the possibility of librarians from different colleges and universities cooperating on creating and maintaining these guides. The humanities librarian has suggested that subject librarians and bibliographers organize their efforts, and tag content in Delicious as a dynamic means of sharing between librarians at different institutions (Meola). This collaborative effort could be managed via an organization such as the Association of College and Research Libraries (ACRL).

Creating subject guides that dynamically include content from Delicious is relatively simple. Only a basic understanding of HTML is required by the person who initially configures the guide. By using Delicious to dynamically include content in subject guides, librarians can quickly add and update content in the guides from anywhere with an Internet connection. This method also allows librarians who do not know HTML or complicated Web authoring software to easily update content without having to wait for assistance from the campus Web designer.

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Works Cited


Etches-Johnson, Amanda. “The Brave New World of Social Bookmarking:
Everything You Always Wanted to Know but Were Too Afraid to Ask.”


Appendix A - Code Used to Display the Last 20 Items Bookmarked on Delicious by “Librarian”

```html
<div id="container">
  <h2>my bookmarks</h2>
</div>
<script type="text/javascript"
src="http://del.icio.us/feeds/json/Librarian?count=20">
</script>
<script type="text/javascript">
  function showImage(img){ return (function(){
    img.style.display='inline'; }) } 
  var ul = document.createElement('ul')
  for (var i=0, post; post = Delicious.posts[i]; i++) {
    var li = document.createElement('li')
    var a = document.createElement('a')
    a.style.marginLeft = '20px'
    var img = document.createElement('img')
    img.style.position = 'absolute'
    img.style.display = 'none'
    img.height = img.width = 16
    img.src = post.u.split('/').splice(0,3).join('/')+'/favicon.ico'
    img.onload = showImage(img);
    a.setAttribute('href', post.u)
    a.appendChild(document.createTextNode(post.d))
    li.appendChild(img)
    li.appendChild(a)
    ul.appendChild(li)
  }
  document.getElementById('container').appendChild(ul)
</script>
```
Appendix B - Cascading Style Sheet Used on TCNJ’s Delicious Subject Guides

<STYLE TYPE="text/css">
.delicious-posts { margin: 1em; border: 2px solid #293F6F; padding: 0.5em; width: 50em; font-family: sans-serif; }
.delicious-posts ul, .delicious-posts li, .delicious-banner { margin: 0; padding: 0 }
.delicious-post { border-top: 1px solid #eee; padding: 0.25em; font-size: 100% }
.delicious-odd { background-color: #FAFAD2 }
.delicious-banner a { font-size: 100% }
.delicious-posts a:hover { text-decoration: underline }
.delicious-posts a { text-decoration: none; color: #a67a00; display: block; padding: 0.3em }
.delicious-post a { color: #293F6F }
</STYLE>