Review article

#SocialBookmarking: An overview and primer for use in pharmacy education

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Abstract

Background: Social bookmarking is a social media platform that has in recent years garnered interest as a potential tool in the higher education classroom. Social bookmarking is the process of saving online resources to a centralized location, labeling resources with specific keywords (tagging), and sharing them with other online users. The objective of this article is to provide an overview of social bookmarking, review its use in higher education, and provide a framework for use in pharmacy education.

Methods: Search methods included the databases Educational Resources Information Center (ERIC), PubMed, Medline EBSCO, Google, and GoogleScholar. Keywords and tags searched included "social bookmarking," "higher education," "pharmacy education," "health professions education," "social media," "collaborative annotation," "Pinterest," "Diigo," and "Delicious."

Results: Several articles were found describing the use of social bookmarking in higher education. Evaluations of these uses consisted primarily of student reaction to the use of this new online tool. Several resources available via the World Wide Web described the potential uses for social bookmarking in the classroom, including icebreaker activities, supplemental information related to lecture material, and advocacy.

Conclusion: Social bookmarking is an online platform with the potential to engage students in classroom learning. Research is needed to determine if social bookmarking leads to improved learning in pharmacy education.

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Keywords: Social bookmarking; Pharmacy education; Social media

Background

Social media are a group of web-based applications that allow users to create, edit, categorize, and share content.[1] Examples of social media (also known as Web 2.0) are well-known to most and include social networking (Facebook and LinkedIn), blogging/microblogging (Wordpress and Twitter), media sharing (YouTube and Flicker), and

social bookmarking (Pinterest and Delicious). The EDU-CAUSE Center for Analysis and Research (ECAR) National Study of Undergraduate Students and Information Technology identified four major benefits of technology in higher education in 2011: (1) technology gives students easy access to resources, (2) makes students feel more productive, (3) helps students feel connected, and (4) makes learning a more engaging, immersive experience.[2] Social media allow students to "aggregate and share the results of learning achievements, participate in collective knowledge generation, and manage their own meaning making."[3] Students are therefore able to take a more active role in their own learning, rather than passively receiving information from an instructor.[4]

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The idea of using social media to enhance formal learning in higher education has been gaining momentum in the last several years, and examples of its use abound both in the academic literature and on the World Wide Web. Particularly in pharmacy education, several publications have documented the use of Facebook or Twitter to augment formal teaching in geriatric pharmacotherapy,[5] pharmacy law,[6] comprehensive disease management,[7] and pharmacy management.[8] Little, however, has been written regarding the utility of social bookmarking in pharmacy academia or other areas of higher education. The purpose of this article is to provide an overview of social bookmarking, review its use in higher education, and provide suggestions for use in pharmacy education.

Social bookmarking

Social bookmarking differs from traditional online bookmarking in that instead of saving a web address to a local file on a computer, one saves the address to a public website and "tags" it with keywords. According to Barton and Thompson,[9] there are three definitive features of social bookmarking: availability, tagging, and collaboration. Availability refers to the ability to access bookmarks from any computer with internet access, rather than maintaining and updating local copies. As of the writing of this article, currently active social bookmarking sites include Pinterest, Delicious, Diigo, CiteULike, Bibsonomy, Educlipper, LiveBinder, and WeHeartIt among many others.[10] Most of these sites offer free registration, but some features may require a paid subscription. Pinterest is a popular site that is used primarily to save and share pictures, although links to the original website are also saved. CiteULike and Bibsonomy allow users to save and share academic references and create bibliographies. Delicious allows users to save, tag, and share bookmarks. Diigo is similar to Delicious, but additionally allows users to annotate and highlight resources. Evernote is a very popular bookmarking application that allows users to save, annotate, and highlight resources in "notebooks." Notebooks can be shared, but only with the paid version of the software. Features of selected sites are compared in the Table.

Tagging is the process of applying freely selected keywords to an information source, and may be done either by the person creating or the person consuming the information. In 2007, Vander Wal[11] wrote that the value in tagging is that people use

their own vocabulary to label items and apply meaning to them. This collaborative method of classifying and organizing data has been termed a "folksonomy" ("folk" plus "taxonomy") and is in contrast to standardized indexing sources such as medical subject headings (MeSH®) that are not controlled by end users. Folksonomies are communal, less expensive to maintain than traditional indexing systems, and allow for flexibility in content exploration by individual users.[12] However, because there is no standardization and tagging is a highly personal method of classification, the meaning of a particular word or category may not translate to others.[9]

In addition to developing a set of keywords to describe a source, individuals can also annotate resources by describing key features of the resource and its value to potential users. Both tagging and annotation require users to think critically about the meaning and usefulness of the resource. Collaborative annotation requires users to make judgments about content in the context of others' opinions. According to a 2013 case study and review of collaborative annotation in education, research has largely shown that collaborative, rather than individual, annotation leads to greater improvement in reading comprehension and learning.[13]

Most social bookmarking sites facilitate the sharing of resources. The social aspect of "social bookmarking" is that any visitor to the website can also see bookmarks created by other site users, search for bookmarks by keyword or user, share, comment, and "like" bookmarks, as well as generate social connections with other users.[14] This form of collaboration may facilitate informal learning, a process whereby individuals learn from daily experience, communicating with others during work or recreation, and from the marketplace and mass media.[15] Formal learning, which consists of knowledge gained in the classroom, from structured activities, lectures, and textbooks, is thought to make up only 10–20% of all learning.[16] Informal learning is effective because it is highly personal.[17] Incorporating social media into the curriculum is a mechanism that may help integrate formal and informal learning in higher education.[3]

Methods

A search of both the primary literature and the World Wide Web identified several published examples of social

Table
Comparing the features of selected social bookmarking sites

Feature	Diigo	Delicious	Evernote	Pinterest	CiteULike	Bibsonomy
Tagging	x	x	x		x	x
Share content with other users	x	x	*	x	x	x
Create groups	x	x	*		x	x
Annotate and/or highlight web pages	x	x				
Import/export bookmarks/files	x	x	x		x	x
Mobile applications	x	x	x	x		

x = These features are available with the free version of the software.

* = These features may be available with a paid subscription.