

# Innovative Web 2.0 Technologies for Integrating the Learning Process

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## Abstract

The innovative technologies of Web 2.0 have created a lot of opportunities for learning in the present web environment. Although these are largely experimental, some of them are very popular and useful. Some popular tools of Web2.0 are wikis, blogs, video sharing, podcasting, RSS, social bookmarking, and many more. Web2.0 is more than a set of 'tools', new technologies and services. The general internet users as well as the teachers and learners have been well adapting to these emerging technologies to integrate the learning process. The paper introduces major Web 2.0 tools and discusses their applications in learning.

**Keywords:** Web2.0, Wikis, Blogs, Social bookmarking, RSS, Podcasting, Vodcasting, Media-sharing, Tagging, pedagogical perspective

## 1. Introduction

The latest web innovations and technologies which have made the Web a *Platform*, that become increasingly applied in the higher education arena. Tools such as Wikis, Blogs, Social bookmarking, RSS and Podcasting etc. are gradually becoming more popular within higher education and support constructive approaches to learning. The new set of Web technologies and services have great potential to socialize online learning to a greater extent. It is blurring the boundaries between study, entertainment and social interaction, reflecting the global transformation of a knowledge-based networked society. These tools and services support much flexibility in the learning processes and allow for easy publication, sharing of ideas and re-use of study content, commentaries, and links to relevant resources in information environments that are managed by the teachers and learners themselves. Web 2.0 is well suited to active and meaningful learning and collaborative knowledge building.

## 2. Conception of Web2.0

The term 'Web2.0' was officially coined in 2004 by Dale Dougherty, a Vice-President of O'Reilly Media inc. during a team discussion on a potential future conference about the Web (*O'Reilly, 2005a, cited in Anderson, Paul; 2007*). Web 2.0 is more than a set of 'tools', new technologies and services. The technologies encompassed by Web 2.0 include, but are by no means limited to wikis, blogs, video sharing, podcasting, tags, RSS, social bookmarking, AJAX etc. These technology tools of Web 2.0 have a greater scope of their application into the mainstream education in the areas of

teaching and learning, scholarly research, academic publishing, and libraries (Owen et al., 2006; Glogoff, 2006; Alexander, 2006).

### **3. Major Web2.0 tools and their application in learning**

#### **3.1 Blogs**

The term ‘web-log’ or ‘blog’ was coined by Jorn Barger in 1997 and refers to a simple webpage consisting of brief paragraphs of opinion, information, personal diary entries, or links, called posts, arranged chronologically with the most recent first, in the style of an online journal (Doctorow et al., 2002). Blogs now provide one of the most important sources of up to date information on the Internet as without technical barriers or editorial processes information is made instantly available as bloggers post new entries to their blogs. There are also many leading academics who actively blog and can provide trustworthy sources of current opinion and information. Readers can add their comments to posts. Blogs also have been used to support group discussions, and hence able to extend the boundaries of the classroom and encourage students in looking for information. It also has a large range of potential use in higher education and research. The implication of blog in learning can be enumerated as follows:

- Blog can be used by institutions and teachers as an easy way to produce dynamic learning environments for course announcements, news and feedback to students;
- It can be used with syndication technologies to enable groups of learners and teachers to easily keep track of new posts;
- It can be used by students as digital portfolios to collect and present their work;
- Building an frequently asked questions resource, students can use the comment facility to publicly ask questions to teachers. The teachers can also use the comments facility to answer to the whole class of students;
- Within a pedagogical perspective, a blog can support comments based on literature readings and student responses as well as to provide a collaborative space for students to act as reviewers for course-related materials.

#### **3.2 Wikis**

The word Wiki originates from a Hawaiian term which means “quick” or “Super fast”. As popularly known, a wiki refers to a web site that anybody can edit. It allows one or more people to build up a corpus of knowledge in a set of interlinked web pages, using a process of creating and editing pages. It offers opportunities for constructive learning more extensively in educational environments due to their low technological barriers and their flexible functionality.

In educational contexts, wikis are ideal for collaborative writing or group projects involving multimedia and are particularly suited to the collaborative creation of study guides, text books, annotated reading lists and subject specific knowledge repositories. (Redecker, 2008)

The various ways in which wiki can be used for learning purposes are like below

- Wikis can be used for the creation of annotated reading lists by one or more teachers;
- Wikis can be used in class projects, and are particularly suited to the incremental accretion of knowledge by a group, or production of collaboratively edited material, including material documenting group projects;
- In a group project a teacher can supply page structure, hints as to desirable content, and then provide feedback on student generated content.
- Students can flag areas of the wiki that need attention, and provide feedback on each other's writing.
- It also can be used as a personal knowledge management tool by the learners to collect and elaborate personal ideas (Schaffert, 2006).
- When wikis are working jointly with complimentary technologies such as RSS they become an even more influential knowledge management tool. For example wikis can use RSS to push recent changes or additions to people who subscribe to a wiki's RSS feed (Kille, 2006).

### **3.3 Social bookmarking**

Social bookmarking is the practice of saving bookmarks to a public web site and tagging them with keywords, thereby making them accessible from anywhere, to anyone. These tags are freely chosen keywords that are assigned to a piece of information (a bookmark in the case of social bookmarking). With these tags, the bookmarks can be organized and displayed with meaningful labels by the choice of end users instead of experts only and the assigned tags are immediately available publicly on the web. As these bookmarks are publicly available, any one can select a tag such as 'Digital Library' and can see what other bookmarks are available using the same tag in which a group of individuals are interested. The significance of social bookmarking is that it flattens the knowledge base and makes it freely available to all who wish to be informed. This informal platform enables learner to find one another, create new communities of users of common area of interest.

In this way social bookmarking has many more implications for teaching and learning which can be enumerated as below:

- Teachers and learners can build up collections of resources by sharing personally classified bookmarks and collaborative filtering of digital content (Vuorikari, 2007; Franklin & van Harmelen, 2007; Porto, 2008; Alexander, 2006);
- With the use of multiple tags and tag clouds, these collections can be used to build up reading and resource lists (Franklin & van Harmelen, 2007). Alternatively, teachers and librarians can create pre-selected and tagged lists of resources for learners to browse and extend (Vuorikari, 2007);

- Teachers and learners can recommend, rate and comment on certain resources they found and post their bookmarks to an individual's blog or a common websites focusing on a given subject area, thus supporting each others' research efforts (Vuorikari, 2007);
- Support students to learn the use of RSS. Many of bookmarking services also have RSS feeds, so students who use a news aggregator can see new postings automatically;
- Examine the popularity of a web site that a learner had listed and examine those who have tagged that resource in order to find new resources. (and perhaps unintended learning opportunities);
- Groups of users with a common interest can team together to use the same bookmarking service to bookmark items of common interest. If they have individual bookmarking accounts, they all need to use the same tag to identify their resources

### **3.4 Multimedia sharing**

These tools of web 2.0 allow the user to communicate not just through words, but also through audio, video, and images thus creates an interesting environment for learners to learn. Media-sharing devices store user-contributed media, and allow users to search for and display content. Media-sharing sites make contents easily accessible for educational purposes. Podcasting is a way in which a listener may conveniently keep up-to-date with recent audio or video content. Podcasting and Vodcasting are powerful tools that allow the communication and distribution of educational content (cf. Cruz & Carvalho, 2007). They are attractive to learners because they allow them to learn at their own pace, listen to the audio or video content as many times as they want to, and to use e.g. commuting time to learn (Morales & Moses, 2006). For instance educational videos are widely popular within YouTube. Special site for learning, like TeacherTube, while far smaller, but still containing nearly, 20000 items, also offer a wide range of educational videos without the risk of students being exposed to inadequate offensive content (Downes, 2008).

Multimedia sharing tools like Podcasts, vodcasts, photo sharing etc can be used for learning purposes in different ways as follows;

- Podcasts and videocasts are new learning paradigm in the academic environment in which material such as a course lectures can be recorded into audio and video files and delivered to subscribing users automatically.
- It can be used to provide introductory material before lectures, or, more commonly, to record lectures and allow students to listen to the lectures again, in there free time in the informal way, without coming to the institution.
- Podcasts can be used to supply audio tutorial material and/or exemplar recordings of native speakers to foreign language learners.
- It is used for student assignments and as an alternative way of producing and

- presenting coursework (Harris & Park, 2007; Cruz & Carvalho, 2007 cited in Redecker, 2009);
- It acts as a means of presenting the education institution and delivering information on services, by, for example, providing news broadcasts or library tours (Harris & Park, 2007 cited in Redecker, 2009).

### **3.5 Really Simple Syndication (RSS)**

In a world of newly added and updated shared content, it is useful to be able to easily keep up to date with new and changed content, particularly if one is interested in multiple sources of information on multiple web sites. A feed reader (sometimes called an aggregator) can be used to centralise all the recent changes in the sources of interest, and a user can easily use the reader/aggregator to view recent additions and changes. A feed reader regularly polls nominated sites for their feeds, displays changes in summary form, and allows the user to see the complete changes.

From an educational perspective, syndication might provide the basis for an extensive online learning environment without the need for a heavily managed service; for example, when the tutor publishes new materials this update will be sent out to students and similarly the tutor will be able to be notified when the student has updated their response on their blog. Furthermore feed readers enable students and teachers to become aware of new blog posts, to track the use of tags in social bookmarking systems, to keep track of new shared media, and to be aware of current news (Franklin & Van Harmelen, 2007 cited in Redecker, 2009).

## **4. Major Impacts of Web2.0 tools on Learning**

Social computing applications are extremely versatile and offer flexible and dynamic learning opportunities that are often more appealing and engaging than traditional learning arrangements. Their potential for attracting and reengaging learners who are at risk of exclusion from the knowledge society is considerable. In this way the social computing tools have lots of positive impacts on the learners. Some major impacts of these social computing tools are presented here:

### **4.1 Independent learning**

Web2.0 tools have potential to produce the independent learners. The foreign universities promote to use those tools aiming towards the production of independent (or autonomous) learners. Independent learners are self-directed learners who are able to set their own learning goals; develop strategies and plan how to achieve those goals; work towards realising the goals, either on their own or with others; and reflect on their learning processes and outcomes, in turn learning by that process of reflection. However, no considerable initiative has yet been taken in India for producing the independent learners (Redecker, 2009).

### **4.2 Learning in Group**

Social computing applications represent a flexible tool for collaborative meaning making and content creation, and for identification, aggregation and exchange of learning content and metadata. The way social computing actually provides a framework for collaboration is shifting the focus from *individual problem solving* to *collaborative problem setting*. From an educational point of view, functionality like collaborative editing (e.g. Wikipedia) can be seen as an opportunity for peer and reflexive learning. There are exiting university courses where students, as part of their course work, contribute to Wikipedia articles. Another eye catching example is ‘Wikiversity’, which seeks to establish a “community for the creation and use of free learning materials and activities” Thus the tools of Web2.0 having the collaborative feature enable the learners to learn in a group (Redecker, 2009).

### **4.3 Networking.**

Social computing applications have increased interconnectedness and communication among both teachers and students affects the way practices evolve in the learning context. It fosters new interactive processes that support *reflection in action* and also expands the learning context beyond the classroom. As Learning 2.0 builds on the concept of peer learning and community, supporting thereafter a decentralized model of learning, which allows access by a larger group of learners.

### **4.4 Personalisation.**

When social computing is incorporated into educational practice it also supports more personalized learning paths, pace and environments (e.g. e-Portfolios; personal learning plans; learning diaries). Hence the scenario has blurred the boundaries between formal and non-formal learning, classroom and distance learning, intra- and extra-institutional learning.

### **4.5 Engagement and motivation.**

Emerging educational formats, available, are more engaging for the learner than the traditional formal education formats. The fact that learners have more control over learning pace, structure and content, and an increased sense of ownership regarding the learning outcomes, motivates them to greater commitment to the learning experience. As engagement and motivation are critical factors for the success of learning experiences, it have great positive impact on learners.

### **4.6 Innovation and creativity**

Social computing tools, particularly media-sharing services has contributed to increasing the individual’s performance and academic achievement. They are suited to supporting basic skills and competences, like digital skills, writing skills and foreign language skills. Thus increases the creativity of learners using those tools of Web2.0.

## **4.7 Multitasking**

The learning 2.0 tools enable the learners to become skilled at multitasking works. At the time of using social computing tools for learning, they are involving with searching, managing, re-combining, validating and contextualizing information.

## **5. Conclusion**

Web 2.0 is suitable for educational and lifelong learning purposes in our knowledge society, because our modern society is built to a large degree on digital environments of work and social communication and educational practices must foster a creative and collaborative engagement of learners with this digital environment in the learning process. However, the technology alone does not deliver educational success. It only becomes valuable in education if learners and teachers can do something useful with it and the librarians are the real promoters in maximizing the use of those tools in learning process. The implications of these innovative technologies are enormous. Both Learners and librarians are only beginning to acknowledge and adopt some of these technologies into their learning process.

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