NIGERIAN ONLINE JOURNAL OF EDUCATIONAL SCIENCES AND TECHNOLOGY
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# WEB 2.0 TOOLS: IMPLICATION ON 21ST CENTURY TEACHING AND LEARNING

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**To cite this article:**
Samuel, S. O., & Egbowon, S., E. (2022). Web 2.0 tools: implication on 21st century teaching and learning. *Nigerian Online Journal of Educational Sciences and Technology (NOJEST)*, 4 (1), 181-187

Nigerian Online Journal of Educational Sciences and Technology (NOJEST)
Volume 4, Number 1,2022

# WEB 2.0 TOOLS: IMPLICATION ON 21ST CENTURY TEACHING AND LEARNING

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Article Infor

***Article History***

Received:
21 February 2022

Accepted:
27 June 10 2022

***Keywords***
Web 2.0, 21st Century, Teaching, Learning

***Abstract***

*The world is in the era of global technology revolution driven by Information and Communication Technology (ICT). With all the attention paid social networks and web 2.0 technology these days, it is important to both explore their uses and evaluate their effectiveness in supporting education and communication in everyday life activities in societies. This web 2.0 technology includes wikis, blog, YouTube, social book marking, Second Life and RRS. This paper explains the concept of web 2.0 and illustrates how web 2.0 technology can be used to enhance teaching and learning process.*

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## Introduction

The World Wide Web (abbreviated WWW or the Web) is an information space where documents and other web resources are identified by Uniform Resource Locators (URLs), interlinked by hypertext links, and can be accessed via the Internet. The first stage of the world wide web evolution is referred to the web 1.0. In Web 1.0, there is only limited interaction between sites and web users. Web 1.0 is simply an information portal where users passively receive information without being given the opportunity to post reviews, comments, and feedback (Cookie, 2012). He further referred to web 2.0 as a writable phrase of world wide web with interactive data.

Web 2.0 is the second stage of development of the Internet, characterized especially by the change from static web pages to dynamic or user-generated content and the growth of social media. Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver rich user experiences.

Rouse (2017) stated that Web 2.0 is the current state of online technology as it compares to the early days of the Web, characterized by greater user interactivity and collaboration, more pervasive network connectivity and enhanced communication channels. Web 2.0 is term that was introduced in 2004 and refers to the second generation of the World Wide Web. The term "2.0" comes from the software industry, where new versions of software programs are labeled with an incremental version number. Like software, the new generation of the Web includes new features and functionality that was not available in the past. However, Web 2.0 does not refer to a specific version of the Web, but rather a series of technological improvements.

Web 2.0 technologies provide a level user interaction that was not available before. Websites have become much more dynamic and interconnected, producing "online communities" and making it even easier to share information on the Web. Because most Web 2.0 features are offered as free services, sites like Wikipedia and Facebook have grown at amazingly fast rates. As the sites continue to grow, more features are added, building off the technologies in place. So, while Web 2.0 may be a static label given to the new era of the Web, the actual technology continues to evolve and change. Web 2.0 encompasses a variety of different meanings that include an increased emphasis on user generated content, data and content sharing and collaborative effort, together with the use of various kinds of social software, new ways of interacting with web-based applications, and the use of the web as a platform for generating, re-purposing and consuming content. (Franklin and Harmelen, 2007)

## Characteristics of web 2.0 Tools

Instead of merely reading a Web 2.0 site, a user is invited to contribute to the site's content by commenting on published articles or creating a user account or profile on the site, which may enable increased participation. By increasing emphasis on these already extant capabilities, they encourage the user to rely more on their browser for user interface, application software (apps) and file storage facilities. This has been called "network as platform" computing by O'Reilly and Tim, 2005. Major features of Web 2.0 include social networking websites, self-publishing platforms (e.g., WordPress' easy-to-use blog and website creation tools), "tagging" (which enables users to label websites, videos, or photos in some fashion), "like" buttons (which enable a user to indicate that they are pleased by online content), and social bookmarking. According to Hinchcliffe and Dion (2006) users can provide the data that is on a Web 2.0 site and exercise some control over that data. These sites may have an 'architecture of participation' that encourages users to add value to the application as they use it. Users can add value in many ways, such as by commenting on a news story on a news website, by uploading a relevant photo on a travel website, or by adding a link to a video which is pertinent to the subject being discussed on a website.

## Features and Techniques of Web 2.0

McAfee (2006) stated that Web 2.0 sites include the following features and techniques, referred to as the acronym SLATES: **Search** – finding information through keyword search, **Links to other websites** - Connects information sources together using the model of the Web, **Authoring** - The ability to create and update content leads to the collaborative work of many authors. Wiki users may extend, undo, redo and edit each other's work. Comment systems allow readers to contribute their viewpoints, **Tags** - Categorization of content by users adding "tags", usually one-word or two-word descriptions to facilitate searching. For example, a user can tag a medical course as "LASU Medicine". Collections of tags created by many users within a single system may be referred to as "folksonomies", **Extensions** - Software that makes the Web an application platform as well as a document server. Examples include Adobe Reader, Adobe Flash, Microsoft Silverlight, ActiveX, Oracle Java, QuickTime, and Windows Media.
**and Signals** - The use of syndication technology, such as RSS feeds to notify users of content changes.

## Impact of web 2.0 Tools on Teaching and Learning

Web 2.0 could allow for more collaborative education. For example, blogs give students a public space to interact with one another and the content of the class. One easy way to approach the benefits of web 2.0 in education is to look at the software that is commonly thought as web 2.0 software. Individual systems are hosted on servers and accessed across the web via a browser, they may be interchangeably called Web 2.0 systems, Web 2.0 services or Web 2.0 applications. Web 2.0 applications can be grouped under the convenient label of social software; software that exists to facilitate group processes. The importance of Web 2.0 is that it is inextricably intertwined with the growth of social software. Some of the social applications commonly thought as web 2.0 software include blogs, wikis, media sharing apps and so on

**Blogs**

A blog is a system that allows a single author (or sometimes, but less often, a group of authors) to write and publicly display time-ordered articles (called posts). Blogs usually provide commentary or information on a particular issue, event, or topic. In some cases, blogs can be about a particular person; an online, public, personal diary. Visitors to the blog can comment on the entries made or respond to comments made by other visitors.
Example of educational uses: A group of bloggers using their individual blogs can build up a corpus of interrelated knowledge via posts and comments. This might be a group of learners in a class, encouraged and facilitated by a teacher, or a group of relatively dedicated life-long learners, Teachers can use a blog for course announcements, news and feedback to students, Blogs can be used with syndication technologies to enable groups of learners and teachers to easily keep track of new posts.

**Wikis**

A wiki is a system that 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. A wiki is a collaborative website that anyone within the community of users can contribute to or edit. A wiki can be open to a global audience or can be restricted to a select network or community. Wikis can cover a specific topic or subject area. Wikis also make it easy to search or browse for information. Although primarily text, wikis can also include images, sound recordings & films. The most famous wiki is Wikipedia.
Example of educational uses:
• Wikis can be used for the creation of annotated reading lists by one or more teachers (see also social bookmarking below, for an alternative method for doing this).
• 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.
• Wikis can be used by teachers to supply scaffolding for writing activities, thus 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.

**Social bookmarking**
A social bookmarking service provides users the ability to record (bookmark) web pages, and tag those records with significant words (tags) that describe the pages being recorded. Examples include del.icio.us and Bibsonomy. Over time users build up collections of records with common tags, and users can search for bookmarked items by likely tags. Since items have been deemed worthy of being bookmarked and classified with one or more tags, social bookmarking services can sometimes be more effective than search engines for finding Internet resources. Users can find other users who use the same tag and who are likely to be interested in the same topic(s). In some social bookmarking systems, users with common interests can be added to an individual's own network to enable easy monitoring of the other users' tagging activity for interesting items. Syndication (discussed below) can be used to monitor tagging activity by users, by tags or by both.
Examples of educational uses:
• Teachers and learners can build up collections of resources, and with a little ingenuity can also use social bookmarking systems to bookmark resources that are not on the web.
In this way it is easy to build up reading lists and resource lists. These may, with the use of multiple tags, be structured into sub-categories.

• 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.

**Media-sharing services**

These services store user-contributed media and allow users to search for and display content. Besides being a showcase for creative endeavour, these services can form valuable educational resources. Compelling examples include YouTube (movies), iTunes (podcasts and vidcasts), Flickr (photos), Slideshare (presentations), DeviantArt (artwork) and Scribd (documents). The latter is particularly interesting as it provides the ability to upload documents in different formats and then, for accessibility, to choose different download formats, including computer-generated speech, which provides a breadth of affordances not found in traditional systems.
Podcasting is a way in which a listener may conveniently keep up to date with recent audio or video content. Behind the scenes podcasting is a combination of audio or video content, RSS, and a program that deals with (a) RSS notifications of new content, and (b) playback or download of that new content to a personal audio/video player. Vidcasts are video versions of podcasts,
Example of educational uses:
• Podcasts can be used to provide introductory material before lectures, or, more commonly, to record lectures and allow students to listen to the lectures again, either because they were unable to attend, or to reinforce their learning. Podcasts can be used to make lectures redundant while still supplying (possibly didactic) presentations of learning material by lecturers.
• Vidcasts can be used to supply to supply videos of experimental procedures in advance of lab sessions
• Podcasts can be used to supply audio tutorial material and/or exemplar recordings of native speakers to foreign language learners.
• Distribution and sharing of educational media and resources. For example, an art history class could have access to a set of art works via a photo sharing system.
• The ability to comment on and critique each other's work; including by people on other courses or at other institutions.
• Flickr allows for annotations to be associated with different areas of an image and for comments to be made on the image, thereby facilitating teacher explanations, class discussion, and collaborative comment. It could be used for the example above.
• For Flickr, FlickrCC is a particularly useful ancillary service that allows users to find Creative Commons licensed images that are freely reusable as educational resources.
• Instructional videos and seminar records can be hosted on video sharing systems. Google Video allows for longer higher quality videos than YouTube and contains a specific genre of educational videos.

**Social networking and social presence systems**

Social networking allows an individual to create a profile for themselves on the service and share that profile with other users with similar interests to create a social network. Users can choose to have public profiles which can be viewed by anyone or private profiles which can only be viewed by people that the users allow. Users can usually post photographs, music, and videos on their site. Examples include Facebook and MySpace (for social networking / socializing), LinkedIn (for professional networking) and Second Life (virtual world). Social networking systems allow users to describe themselves and their interests, and they generally implement notions of friends, ranking, and communities. The ability to record who one's friends are a common feature that enables traversal and navigation of social networks via sequences of friends. Ranking and communities are more selectively implemented. Ranking of user contributions by community members allows for reputations to be built and for individuals to become members of good standing; this can be an important motivator for the individual contributions that make for a thriving community. The ability to create sub-communities allows for nurturing and growth of sub-community interests in an environment that provides a degree of insulation from the general hubbub of system activity.
Example of educational uses:
• LinkedIn acts, at a professional level, as a model of educational use in the way in which it can be used to disseminate questions across the community for users seeking information.
• There are a wide variety of educational experiments being carried out in Second Life. These vary from the mundane with a virtual world gloss to more adventurous experiments that take advantage of the virtual reality facilities (e.g. construction of ancient environments for exploration by students).

• Other varieties of social networking systems are used at a professional level for community learning and act as potential models for educational use.

**Collaborative editing tools**

These allow users in different locations to collaboratively edit the same document at the same time. As yet most of these services do not allow for synchronous voice or video communication, so the use of third-party synchronous communication systems is often needed to co-ordinate editing activity. Examples are Google Docs & Spreadsheets (for text documents and spreadsheets), and Gliffy (for diagrams). There are over 600 of such applications.

Example of educational uses:

For collaborative work over the web, either edited simultaneously or simply to share work edited by different individuals at different times. Creation of works of art or design across disciplines. For instance, architecture and interior design students from different universities working together to complete a commercial brief.

**Syndication and notification technologies**

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 centralize all the recent changes in the sources of interest, and a user can easily use the reader/aggregator to view recent additions and changes. Behind the scenes this relies on protocols called RSS (Really Simple Syndication) and Atom to list changes (these lists of changes are called feeds, giving rise to the name feed reader). A feed reader regularly polls nominated sites for their feeds, displays changes in summary form, and allows the user to see the complete changes.

Example of educational uses:

• In a group project where a wiki is being developed collaboratively RSS feeds can be used to keep all members of the group up to date with changes as they can be automatically notified of changes as they are made. Similarly, for new blog posts made by class members.

• Feed Readers enable students and teachers to become aware of new blog posts in educational blogging scenarios (see above), to track the use of tags in social bookmarking systems, to keep track of new shared media, and to be aware of current news, e.g., from the BBC.

## Conclusion

Web 2.0 will have profound implications on learners and teachers in formal, informal, work-based and lifelong education. Web 2.0 will affect how Nigerian universities go about the business of education, from learning, teaching and assessment, through contact with school communities, widening participation, interfacing with industry, and maintaining contact with alumni. This is particularly important as teachers groomed through ICT cannot but integrate same in their everyday classroom process thereby making the teaching and learning process fun, easy and efficient.

## Recommendations

Considering the above, the researcher recommends the following:

1. Web 2.0 will be the future of distance learning and as such, Nigerian universities should develop mobile learning apps for various distance learning programmes.
2. Library professionals must web 2.0 tools to offer traditional services in an innovative manner.
3. Lecturers should always record their lessons and share via web 2.0 technology for students and interested persons to have access to the class and review the lessons.
4. Open and distance education administrators should device a means of assessing the level of mastery of information technology operation among their students.
5. University departments should develop interactive blogs for different courses so as to enhance collaborative learning.

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