Applications of Web 2.0 in the Enhancement of Services and Resource in Academic Libraries: An Experiment @ JIIT University Noida, India

Sanjay Kataria
Head-Learning Resource Centre
Jaypee Institute of Information Technology University
Noida, India
skataria.jiitu@gmail.com

John Paul Anbu K.
Head – Periodicals
University of Swaziland Libraries
Swaziland
anbuj@uniswacc.uniswa.sz

Abstract
The last three decades have seen an enormous change in the field of library and information services. The main reason for this sea change is the impact of Information and Communication Technology tools and services which have influenced the library services. In recent years, there has been a significant rise in social network websites and online applications where, “like minded users share resources, create, tag and label content and rate it in some way”. Such applications vary greatly, ranging from websites where users can add, organize and share, bookmarks (e.g., del.icio.us), academic references (e.g. CiteULike.org), and photographs (e.g., Flickr.com) to websites which can provide one stop information services. What is common amongst these websites is their emphasis on online collaboration and sharing of resources among users. All these new tools and techniques are made possible by the concepts of second generation of Web which are called as Web 2.0.

Library 2.0 is a concept taken from Web 2.0 with a vision of offering a different library service, geared towards the needs and expectations of today’s library users. In this vision, the library makes information available wherever and whenever the user requires it, and seeks to ensure that barriers to use and reuse are removed. Library 2.0 facilitates and encourages a culture of participation, drawing upon the perspectives and contributions of library staff, technology partners and the wider community. Blogs, wikis and RSS are often held up as exemplary manifestations of Web 2.0. This paper is based on a proposed model for the Learning Resource Center (LRC), Jaypee Institute of Information Technology University, Noida, UP, India, to harness the different facets of Web 2.0 and exemplify the impact of Web 2.0 technologies especially in the enhancement of usage of LRC resources and services. The proposed model was designed, developed and tested by feedbacks and it was found that the users are very much agreed and satisfied that the feature of Web 2.0 like blogs, RSS etc., really help them and bring them more closer to the Learning Resources Centre.

Keywords: Web 2.0; Library 2.0; Blog, RSS, Social Networks. JIIT University.

Introduction
The last three decades have seen unprecedented changes in the field of library and information services. This is mainly because of the way the Information and Communication Technology tools and services have influenced the library services. Gobinda Chowdhury argues that while “ICT and internet technologies have changed the nature of libraries in all sectors, they have also changed the perception and expectations of the user community” (Chowdhury, 2006: 455). The users of the libraries who were simply ‘readers’ of the books are now transported into ‘information seekers’ and this is mainly because of the way the internet and ICT tools have advanced the outlook of libraries. It is safe to say that the libraries are also transforming themselves into ‘information centers’. Readers are elevated from ‘information seekers’ to ‘information confirmers’ and finally to ‘information consolidators’. The libraries too have become ‘learning resource centers’ in place of information centers. LiLi observes that in “today’s Information society, libraries are functioning s an Information centre, a learning center, a training centre, and a publication centre”(LiLi, 2006: 390). The change in the perception of readers and the libraries have restructured the entire concept of libraries and redefined its objectives.

The above mentioned changes in the libraries and amongst its users are facilitated by the rapid changes in the web technologies, knowledge management tools and services. In the case of web, there seems to be a significant rise in social networking websites and online applications where, like minded users share resources, create, tag and label content and rate it in some way. This is very important for consolidation of information as the users are now able to identify, seek, confirm and consolidate the kind of information which they look for. Such applications vary greatly, ranging from web sites where users can add, organize and share, bookmarks (e.g., del.icio.us), academic
references (e.g., CiteULike.org), and photographs (e.g., Flickr.com) to websites which add-up and provide most of the services as a one-stop solution.

Another important aspect common to these applications is their emphasis on online collaboration and the sharing of resources amongst users. Beginning with simple web pages and generic content libraries, a variety of early initiatives including Stanford Online, “Web Course in a Box,” and Top Class evolved during the middle of the previous decade are available for users. How was it made possible? The change didn’t come overnight. Many observers feel that this transformation is the result of the second generation of web which is called as Web 2.0, drawing the attention of IT professionals, businesses, and Web users. Web 2.0 has been coined by O’Reilly Media (an American media company) to distinguish between the old and the new generations of websites.

Web 2.0 technology and its features
Webs 2.0, contrary to what most people perceive is not a standard. As O’Reilly himself projected it is just a collection of ideas on the perceived services. Minsk observes that “in recent years, new software design patterns and business models are observed on the Web which is commonly referred to as Web 2.0 (Minsk, 2007: 315)” Most people call it as an experience. Some people describe it as “warm” web or “hot” web. It is “warm” because it provides a kind of warmth to the users—a kind of ‘interactivity’ to the users. It is “warm” because it provides dialogue and life. Stephen Abraham describes Web 2.0 as a “conversation”. Modern users look for this kind of warm experience with the web, something like an interactive dialogue. The outcome of this interactivity is the emergence of services like Instant Messaging, Streaming media, Blogs, news feeds, tagging etc. which are grouped together called as Web 2.0 services. The modern library concepts have also embraced these services and call them as Library 2.0 services. The concepts of Library 2.0, OPAC 2.0, and Librarian 2.0 are the offspring of Web 2.0 ideas. The idea of Web 2.0 can be summarized as the reciprocal link between the user and provider. The essence of Web 2.0 lies in the genuine interactivity between the user and the content. Thus many services which underline the participation platform were derived and underline the concept of Web 2.0. Casey in his LibraryCrunch post observes that the libraries also followed the commercial website by migrating from the earlier library services to the web 2.0 based services which formed basis for the Library 2.0.

Web 2.0 and Library 2.0
From time immemorial librarians strived hard to deliver new and upcoming services to their users. The second generation of libraries is broadly classified as those which make use of the Web 2.0 tools and techniques to usher its users to the next level of usage. The early adapters of the previous generation of web services had their library services much more as a static library. The first generation of Library services used the technology as only extensions of their existing manual operations. The card catalogues were converted into electronic catalogues. The manual circulation and Readers’ services were made automated services. But the advents of Web 2.0 concepts and tools have brought in a sea change in the process of library services. The exciting Web 2.0 tools such as Synchronous Communication (Instant Messaging), Content Delivery (RSS Feeds, News Feeds), Streaming Media, Collaborative Publishing Tools (Blogs, Wikis, Tagging etc...), and Social Networks are slowly becoming part of the library services. Many librarians and integrated library systems use these exciting tools to bridge the gap between the user and the information.

Most of the services and tools of the second generation of libraries are not new to libraries. In fact these services are extensions and developments of what the libraries have been doing for a very long time. The age old reference services are now being enhanced using the Web 2.0 tools to have instant messaging services. The SDI services are now enhanced to become News Feeds and HTML feeds. But the collective outcome of these extended services is that there will be a revolutionary change in the face of the library and its users. There will be substantial change in the collection development, content delivery, library services and many of these library activities. The sections below highlight each of the Web 2.0 tools and services and link how they can be effectively used for the libraries.

Instant messaging
Instant messaging is a real-time text/audio/video communication between more than one individuals. A number of new and upcoming library systems incorporate this useful utility. The early part of this century saw the advent of web based catalogues which have made use of this utility to communicate with its users in a much more innovative and useful way. In the earlier versions of OPAC there used to be a section know as frequently asked questions which covered a number of issues in the libraries, but those services were merely stock questions and answers which were not dynamic. Currently most of the integrated library systems come with a suite called Reference Librarian, or Reference Desk which is more interactive. The users get interactive help on a number of issues through this reference desk. Interestingly these reference desks are becoming more and more interactive with more multi-media experience where audio and video messaging has become common. One of the main advantages of this service is that the transcripts of these references are valuable tools for the evaluation and analysis for future reference. Many integrated library systems use this service in their OPAC interface.
**Streaming Media**
Streaming Media is another important Web 2.0 enhancement which has an influence on the library services. Streaming media is a "Sequential delivery of multimedia content over the network" mostly on request, providing the requested media instantaneously. In traditional libraries many short films, music, and different forms of streaming media are catalogued and given to the users to be used offline. These are potential material which are marked for streaming media for the users. More and more ILS and OPAC 2.0 services are including the streaming media in their services.

**News Feeds**
The advancement of web has brought news feeds directly into our desktops. The advent of news feeds which are called as RSS (Relatively Simple Syndication) has seen that the news service come to the user. The emerging library services seem to have captured this novel idea into the development of library services and have imbedded them in the library services. In olden days the libraries ran a service called SDI (Selective Disseminating of Information). Those services can be very effectively automated to serve users with news feed. For a multimedia library catalogues and dynamic library catalogues like music catalogue the RSS Feeds are good choices.

**Podcasting/Vodcasting**
Podcasting can be defined as the process by which the digital audio files are distributed over the internet using either feeds or by any other distribution media. Vodcasting is the video format of the same kind of service. Mostly the media casting which includes both audio and video is done either through the "media on demand" or through subscription services. These services allow the users to have a higher level of control over what media they want as it works on the demand and supply chain of activity.

**Blogs**
The weblogs which are the innovations of Web 2.0 concept make another form of information source in modern libraries. Interestingly, many libraries treat blogs as another form of publication. With so many blogospheres available, most of the OPACs now try to sort them in subject order for the readers and avail them to use it. Blogs are considered to be an informal source of information. Though the blogs have not formed the formal part in the library environment most of the modern library catalogues try to use this utility in their catalogues.

**Tagging**
Another Web 2.0 feature which is becoming common in library community is called tagging. Tagging is described as the process by which the resources in a collection are assigned tags in the form of words, phrases, codes or other strings of characters. This allows users to add and change the data and metadata and at times give a local flavor to the data and metadata. The advantage of user tags is that it helps the data to be more easily searchable. Flicker and Del.icio.us are some of the web based examples of tagging. As the Web 2.0 re-emphasises the importance of users and their impact on services the impact of tagging in library services are greatly anticipated. The tagging service from the university of Pennsylvania library catalogue illustrates how tagging is been tried in a library catalogue. Most of the advocates for tagging argue that tagging characterizes the following principles:

- It is user-oriented
- It empowers the library users
- It makes the library service more democratic
- It makes the process very affordable
- It makes the process more collaborative
- The process is more distributed
- The process is more dynamic
- The process is instructive for the users as well as the providers

More conservative librarians feel that tagging has got its own negative focus on libraries and their catalogues. But the middle ground for the future development in the tagging is that there should be moderation from the librarian’s point of view. The users can include tags to a record but the suggested tags are to be submitted to the librarian who can approve or disapprove. On approval these tags can be added to the record.

**Social Networking**
Social Networking involves a software based networking of communities which have common interest. Forums are prime examples of social networking where discussion groups with common interest join together to share common ideas. Most of the social networking facilities are web-based interfaces where users make use of the above mentioned Web 2.0 tools such as chat, messaging, email, video, blog. Etc.,

Living examples of the social networking groups are MySpace, FaceBook, Del.icio.us, Flickr. The social networking spaces are considered to be potential meeting place of likeminded people.

**Wikis**
Wiki is a piece of server software that allows users to freely create and edit Web page content using any Web browser. Wiki supports hyperlinks and has simple text syntax for creating new pages and cross links between internal pages on the fly. Wiki is unusual among group communication mechanisms where it allows the organization of contributions to be edited in addition to the content itself. Several libraries have used the Wiki tool in the provision of different services. A Wiki-like platform created for the librarians to work collaboratively and concurrently on providing answers.
to the users’ enquiries and enable them freely edit text and post their point of view. This allows any staff to tap on the collective wisdom of the communities of Subject Librarians and provide quality answers to their queries. Besides using Wiki as a collaboration tool, it can be used for creating research guides, courseware etc. An advantage of using the Wiki to create the research guide is the ability to add and edit content easily and to keep it updated. The Wikis also allow the librarians to determine which content are used most and this can influence the type of content to focus on.

Learning Resource Centre, JIIT University
The Jaypee Institute of Information Technology University, Noida (UP) India is a leading university in the filed of technical education in India. The vision of this university is “To become a centre of excellence in the field of IT Education & Training, comparable to the best in the world for producing professionals who shall be leaders in innovation”. The JIIT University has setup the Learning Resource Centre (LRC) as a backbone of academic and research activities of the University. LRC has been catering to the information needs of the faculty members, students, staff, and research scholars since its inception. LRC holds around 32000 volumes of books and more then 14000 e-journals which cover the disciplines of Computer Science, Information Technology, Biotechnology, Mathematics, Physics, Materials Science, Humanities, Management and other areas related to Engineering, Science and Technology. The collection comprises of printed documents such as books, reports, theses, standards, atlases, patents and back volumes of journals. The non-book collections include material like audio/video cassettes and CDROM discs etc. The LRC is a member of Indian National Digital Library in Engineering, Sciences and Technology and All India Council of Technical Education (INDEST-AICTE) and has been subscribing to IEEE, ACM, SpringerLink and LNCS digital libraries. LRC is also a member of Developing Library Network (DELNET) for sharing the resources among its member libraries. The LRC has a modest reading and research facility within the library which can house close to 350 users at a time to carry out academic and research activities such as reading books, accessing electronic journals, internet, computer programming and software development etc. It is connected to high speed internet and intranet of JIIT network. All activities of LRC are computerized, including bar-coded ID cards and separate On-line Public Access Catalogue (OPAC) terminals to know the status of books at any time. The LRC has implemented an integrated electromagnetic security system (3M India) for safety of LRC material. The LRC has been offering the following services to its paterns, i.e. book loan, reprography, scanning, printing, access to e-resources; inter library loan facilities, current awareness services and SDI. It also has developed an Institutional Repository by using MIT’s DSpace the open source repository software. The future plans of LRC are as follows:

- to develop user interactive website based on Web.20 technology (Proposed)
- to set up a special unit of multi-media resource centre
- to implement RFID technology for easy stock verification and self circulation
- to generate/create of scholarly communication instead on storing & retrieval
- to start a Newsletter/journal etc.

An advisory committee of LRC has been constituted by the Vice-Chancellor with the aim to update and modernize the LRC and to take special care of the needs of its users. Last seven years of the author’s experience with this university, have shown that students do not have much interaction with the librarian in comparison to the faculty members. As a result of that the students do not have any idea about the various facilities available in terms of research and development in their field. It is also been noted that...
the students assume that library is the only place where they can refer the scholarly materials. Virtual library concepts and other collaborative network concepts are very new to the students. Keeping these views in mind, the advisory committee and the librarian planned to have an interactive library website where students can update themselves and also can interact with library staff for queries and suggestions. The proposed Library model for LRC will have an LRC forum, LRC blogs, RSS, Wiki, instant messaging and other tools of Web 2.0 technologies. In order to give shape to the idea of interactive Library 2.0 model an effort has been made to design and develop an interactive Web 2.0 enabled LRC website to interact and facilitate quality services to its users. The main idea behind this model is to create awareness; user education and personal interaction with users and also to develop the culture for creating and using the knowledge instead of collecting and storing.

**Proposed Library 2.0 model for LRC @ JIIT University:**

The proposed model, has tried to put a simpler interface to the library patrons using the web 2.0 tools. The design of the Library 2.0 at the LRC was based on “pedagogical perspective” rather than the “technology” as it was strongly felt that “technology alone cannot create changes in education” (Sirje, 2008: 272). The Learning Resource Centre website has a very simple interface with the array of Web 2.0 tools and services available as service on the left panel while the right panel ticker gives the current information about the learning centre. The notable Web 2.0 tools available at the content bar are 1) LRC Forum, 2) LRC Wiki, 3) LRC RSS, 4) LRC YouTube videos, 5) LRC Social Networking, 6) Content Tagging and 7) Media tagging. A scrolling dynamic notice to the library users appears on the right panel to inform the users about the current news about the centre. The top menu panel gives the usual library interface such as the services, the resources along with the “Ask Librarian” utility for the patrons to get in touch with the librarian with a Web 2.0. chat utility. All other library related links are available for the users in the main panel as hyperlinks.

**LRC Forum**

This Library 2.0 model covers most of the Web 2.0 features. First in the list is the Forum where an online forum has been created for library patrons and professionals. This message board interface is created mainly to create an interactive bulletin board atmosphere for the LRC users, the university students and staff. This site offers, as like any other forum, statistics of the usage, who’s online and host of other forum related services.

**LRC Wiki**

The LRC Wiki is a very simple interface with the creative common share like attribute license to create and edit content in the LRC Wiki spaces. It makes use of the open source software in creating the spaces. Similarly there are other links like LRC RSS, LRC YouTube Videos, LRC Social Networking, Content Tagging etc. All these services aim at bringing the users close to the library.

**Users Reactions**

At every stage of the creation of this library 2.0 service the user reaction and interaction were taken into consideration. As a tool for analyzing the needs and expectations of the users a scientific feedback methodology was adopted through online survey. Accordingly a survey was created at http://freeonlinesurveys.com/rendersurvey.asp?sid=n5letkywt4uq2f358615.

A total of 20 simple questions and 2 comment/suggestion questions were created. The feedbacks from the users were analyzed and accordingly the website was modeled.

From the user feedback it was evident that all the users felt that there is a need for a separate website for the library services. Close to 97 per cent of users were aware of the Web 2.0 concepts and among them
close to 78 per cent of users were aware of one or the other Web 2.0 services like RSS, Tagging, Forums, Blogs etc. When it comes to preference the users seems to prefer the Forums as they feel that social networking as an important tool in the enhancement of library services.

As the creation and updating of the library 2.0 services depend mainly on user reaction, very specific questions related to such services were posed to the users. It was very encouraging to note that close to 80 per cent of users felt that the new services will enhance the learning resource centre. Close to 50 per cent of the users graded the website and its services as very good while 20 per cent graded it as excellent and another 20 per cent good. Below are some of the graphs illustrating various questions and feedbacks from the users.

Fig: 3: LRC Wiki

Conclusion
As mentioned in the beginning of this paper the concept is based on a proposed model for the Learning Resource Center (LRC), Jaypee Institute of Information Technology University, Noida, India to find out the impact of Web 2.0 technologies in enhancement of usage of LRC resources and services. In our experience we found that this working model was designed, developed and tested exhaustively by feedbacks and it was found that the users very much agreed and were satisfied that the exciting feature of Web2.0 like blogs, RSS, etc. really help them and bring them closer to the Learning Resources Centre.

We sincerely hope that this model will be a tool for many libraries which want to embrace the technology in order to serve its users in a better way. Most of the tools and technologies which we have included in our model are open source.

References
knowledge". Online Information Review. 30 (4). pp.454-460.