

Digital Natives and Virtual Libraries: What Does the Future Hold for Libraries?

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Abstract

Social networks such as Facebook, MySpace and LinkedIn are among the most heavily visited web sites. They are used not only for social networking and entertainment but also for access to information, for learning and for carrying out professional work. Social networks commonly have Web 2.0 features, offer personalized services and allow users to incorporate their own content easily and describe, organize and share it with others, thereby enriching users' experience. Some users tend to "live" on those social networks and expect information providing organizations to offer similar services. They want libraries to be as accessible, flexible, open to collaboration and sharing as that of social networks and heighten the expectations from such institutions. The future of libraries is closely associated with how successfully they meet the demands of digital users. Otherwise, the "net generation" or the "digital natives" grown up with the Web, Google and Facebook would see libraries as outdated institutions and "take their business elsewhere" to satisfy their information needs. In this paper, the impact of the technological convergence on information providing organizations are reviewed and the challenges and opportunities facing libraries in the digital environment are discussed.

Keywords: Virtual libraries, Web 2.0, Library 2.0, digital information services, digital natives, social networking systems, technological convergence.

Introduction

Libraries are no longer "brick and mortar" businesses only, as they once used to be. They can provide access to information resources and services on a 24/7 basis without even users coming to the library building, thereby removing the temporal and spatial barriers. Thanks to the Web 2.0 technologies, library collections and services are extended beyond the library walls, thereby removing some of the limitations of the "brick and mortar" buildings. Moreover, as libraries become more "virtual", they can offer more synthesized, specialized and mobilized services to users in points of need. Users can consult the library resources using their desktop computers or mobile phones and get access to the electronic content, download music or video and complete various transactions from within other environments such as learning management systems (Murray, 2006).

Just as libraries are becoming more sophisticated by moving their resources and services to the virtual environments, so are users. They no longer flock to the library buildings but instead use the same set of Web 2.0 technologies to control their own data, remix the rich content available through other sources with that of libraries and share it with others. They are not passive recipients of library services as they once used to be. The collaborative features of Web 2.0 make users more involved, active and creative, and enable them to contribute to the library content by tagging sources or by creating new content or developing applications.

Running libraries as both "real" and "virtual" operations is an unenviable task. So is serving the increasingly more demanding users who request interconnectivity all the time (Dempsey, 2009). This paper briefly discusses the implications of "convergence" and its impact on library and information services.

Digital Natives and Virtual Libraries

Marc Prensky (2001a, 2001b) characterized students who grew up with the Internet and are surrounded with digital media such as computers and mobile phones as "digital natives". Always interconnected, the digital natives prefer graphics over text, process information faster, and perform several tasks at once. The "digital immigrants" who were born before the age of

the Internet and the Web, on the other hand, do not feel at home with such technologies, prefer text over graphics, and think and perform in a linear fashion. Prensky argues that digital natives “*think and process information fundamentally differently* from their predecessors” and “*their thinking patterns have changed*” (Prensky, 2001a, 2001b, italics in original). He refers to the findings of neuroplasticity research showing that “different kinds of experiences lead to different brain structures” and that “the brain changes and organizes itself differently based on the inputs it receives”.

As I discussed elsewhere (Tonta, 2009), digital natives seek, use and create information in a markedly different fashion than that of digital immigrants. Digital immigrants continue to use “brick and mortar” libraries to get access to information and services, whereas “digital natives prefer their libraries to be where they happen to socialize, study, or work”:

Most digital natives have already abandoned libraries that are not networked. They flock to social networking sites such as Facebook or MySpace instead of library web sites. This is mainly due to the fact that such social networking systems “are rapidly becoming Webs within the Web – one-stop shops for a wide range of services” (Social, 2009). Social networking systems function as a virtual place to get socialized as well as to share information, run thousands of applications or create their own content and applications. As one of the best examples of social networking sites using Web 2.0 technologies, Facebook provides access to 52,000 applications created by 660,000 developers (Social, 2009).

In order to serve the information needs of both digital immigrants and digital natives better and provide comparable services to that of social networking sites such as Facebook, libraries make use of Web 2.0 technologies. Web 2.0 “refers to a perceived second generation of web development and design, that facilitates communication, secure information sharing, interoperability, and collaboration on the World Wide Web”. The Web is seen as a “platform” to develop web-based user communities and harness collective intelligence through “hosted services, and applications; such as social-networking sites, video-sharing sites, wikis, blogs, and folksonomies.”¹ Web 2.0 provides, among others, rich user experience, dynamic content, openness and freedom.

The incorporation of Web 2.0 concepts in the library is referred to as “Library 2.0” (Miller, 2005). Library 2.0 reflects a transition within the library world in the way that services are delivered to users. It attempts to harness the library user in the design and implementation of library services by encouraging feedback and participation. The Library 2.0 model offers bi-directional service and increases flow of information from the user back to the library.

Libraries can benefit from Web 2.0 technologies by “diffusing” and “concentrating” their services (Dempsey, 2008). Diffusion covers a range of tools and techniques which create richer connectivity between people, applications and data, and provide richer presentation environments through blogs, wikis, RSS and social networking. Users are already familiar with such tools and they can readily accept library services offered through such channels. Concentration on the other hand involves major gravitational hubs such as Google, Amazon, and Facebook with data, users and communications and computational capacity. More and more libraries entail the sources and services of such hubs as they create value and complement libraries’ own resources. They create value by aggregating user data (e.g., counter statistics), user-created data (e.g., tags) or transactions (e.g., circulations).

The transition from the “brick and mortar” libraries to “virtual libraries” involving Web 2.0 technologies presents enormous challenges and opportunities. While traditional libraries offered their services through a more resource-centric approach, virtual libraries ought to opt for a relationship-centric approach (Lagoze, 2000). Virtual libraries have to offer personalized sources, services and applications; incorporate recommendation systems; and enable users to merge user-created content with that of libraries. Referred to as “Web 3.0”, the combination of Web 2.0 and the Semantic Web facilitates the location and fusion of information available through the Web by performing some basic reasoning on the requests of users and machines.²

¹ http://en.wikipedia.org/wiki/Web_2.0.

² http://en.wikipedia.org/wiki/Semantic_Web.

The Impact of Convergence on Library and Information Services

“Convergence” is defined as the intertwinement of species or technologies. “Technological convergence refers to a trend where some technologies having distinct functionalities evolve to technologies that overlap, i.e. multiple products come together to form one product, with the advantages of each initial component”.³ Mobile phones, for instance, enable us not only to communicate but also to take pictures, listen to music, get access to the Web, and find our way, thereby combining the communication, audio, video, web and GPS technologies successfully.

Just as various technologies converge, so do our professional, personal and social lives. The boundaries among them tend to get blurred, thereby making it harder to differentiate them from each other. For instance, one cannot easily tell if someone using a cell phone is communicating with his/her friend(s), conducting business or using library services. There must be some kind of causal relationship between the convergence of technologies and the convergence of lives, although it is difficult to answer the conjecture of which one comes first.

Whatever the answer to the above conjecture, the technological convergence has a tremendous impact on both “brick and mortar” and “virtual” libraries. Some of the implications of convergence on library and information services are summarized below.

The importance of library as a “place” is lessening, as fewer users physically travel to the library to use the resources and services. This does not necessarily mean that users’ information needs get decreased over the years. On the contrary, they need more timely and convenient information to keep up with their converging lives. Remote access to libraries from anywhere and everywhere on a 24/7 basis satisfies their information needs to a certain extent. Access to digital content (e.g., e- books and journals) and digital services (e.g., virtual reference services) simplifies users’ lives. The lessening of the importance of library as a place does not necessarily mean that the importance of library as an institution is decreasing, too. Although the number of on-site users is decreasing, the use of online resources and services has been on the rise, sometimes an order of magnitude higher than their printed equivalents, because of their being available remotely. Therefore, the decreasing number of on-site users cannot be taken as the sole criterion to evaluate the performance of libraries as a whole.

It should also be noted that the Web offers a more diverse set of information resources, usually free of charge, from a multitude of different providers, although the content may not necessarily be as well selected and organized as those available through libraries. Libraries are not only faced with competition but also they have to cooperate with the competition as they cannot always provide similar services. Diffusing library services through Web 2.0 technologies to where users congregate and providing access to the services of, say, Google or Amazon along with library services (concentration) can be seen as a way of cooperation. In fact, companies providing such services should not be seen as “competition” but rather as allies, as libraries usually lack the wherewithal that they do.

Technological convergence also blurs the distinctions between different types of libraries such as public, university or research. The global accessibility and availability of resources through the Web makes it easier for all types of libraries to incorporate them in their own systems. Thus, any library wanting to enhance its online catalog can implement a parallel Google or Amazon search along with a local search so that its users will be served better. This is also reflected in the online services offered by different types of libraries. Regardless of type, libraries offer, say, online reference services through instant messaging. They can make their resources harvestable by the crawlers of search engines such as Google, thereby making libraries more visible and increasing the use of resources and services. Different types of libraries increasingly appear in social networking systems such as Facebook or Second Life so that users can search their collections from within such sites. Similarly, any type of library can move its resources to the users’ work, learning or travel environments by developing suitable interfaces (e.g., for mobile access).

One of the challenges that convergence brings about is that libraries have to integrate outside resources and services with their own. From the management point of view, such integration necessitates a more flexible approach. They have to incorporate user-created content with their

³ <http://en.wikipedia.org/wiki/Convergence>.

standard content. For instance, users can easily enrich bibliographic records by entering their own tags, reviews, pictures, etc. OCLC's WorldCat allows users to add table of contents or reviews and make it part of the bibliographic record. The Library of Congress (LC) ran a year-long project with Flickr to have users tag some historical pictures in LC's collection (Springer et al., 2008). Integrated library systems should accommodate this and blend the user-created content with the official one. Moreover, users should be able to search the standard contents of libraries by using their own taxonomies. There are several examples of collaborative content and taxonomy development projects available through the Web (e.g., CommunityWalk and Wikimapia). Libraries should be ready to accommodate different layers of user views (of collections and taxonomies) mounted on top of the standard one.

The Impact of Convergence on Education for Information

Technological convergence also creates a challenge for educational institutions. Knowledge and skills of information professionals tend to get obsolete much faster nowadays. Library and information schools should design flexible and interdisciplinary programs in order to address this issue. They should offer continuing education programs and seminars more often to complement and augment the skills of information professionals. Education for information should address such issues as, among others, how to (a) design and run information services through Web 3.0 or the social semantic Web; (b) create smart information objects to populate the so called "the Internet of Things"; and (c) increase users' information literacy skills so that they can easily function in this complex environment.

More often than not, however, the curricula of library and information schools address the challenge of technological convergence more slowly due to a number of reasons. First of all, it takes time for professors to update their own skills. Second, it takes time to update the content of current courses, design new ones and get them approved by the regular channels. Third, although it may be tempting to design a new course to address a certain challenge, it is not always clear how long the impact of a certain technology would last. After all, we no longer see courses that teach students how to set up and maintain a university "gopher" site!

What Does the Future Hold for Libraries?

Forecasting the future is not always a risky business. By the time we are into the future, probably nobody would remember what you said if you are proven wrong (unless your name is Bill Gates or Henry Ford)! We, indeed, live in interesting times. Needless to say, libraries have always been at the forefront of institutions that get affected by technological as well as societal changes, which makes forecasting even more difficult. It can be safely predicted that libraries have to be prepared to serve a more demanding clientele comprised mostly of digital natives. Currently, library and information services are provided mostly by digital immigrants who try to cater to the information needs of digital immigrants as well as digital natives. Digital immigrants, on the other hand, are increasingly being replaced by digital natives who will soon populate the overall library and information scene and assume responsibilities to serve not only digital natives but also digital immigrants. This is likely to have a tremendous impact on library and information services.

Libraries will continue to exist as both "brick and mortar" and "virtual" institutions in the foreseeable future. Regardless of their being "brick and mortar" or "virtual", libraries continue to serve "real" users in both environments because library services have always been tied to a community. Thus, it will be all the more important for libraries to offer relationship-centric information services. In addition to discovery, organization and retrieval of information sources, libraries are faced with the challenging task of the organization of relations between information sources and people. Moreover, as is the case with social networking systems, libraries have to think carefully about the organization of the relationship between "people and people" with regards to their use of resources. Semantic web offers promising opportunities in this respect.

The educational programmes for information professionals are likely to be "remixed" or "mashed up" with other interdisciplinary programmes so that diverse information needs of digital natives can be catered for. It is not enough for the so called "iProfessionals" ("i" for information) to be knowledgeable and skillful about traditional information organization. They should also possess such knowledge and

skills so that they can function as web designers, information architects, network managers, and usability specialists, among others, within their organizations (Who, 2009). Moreover, they should possess people organization skills (both real and virtual) to better serve their needs. After all, despite the impact of technological convergence, the information profession is here to serve the people, be they digital natives, digital immigrants or “digital fossils” (Stein, n.d.).

Conclusion

The impact of convergence is likely to be felt more heavily over the next decade not only in libraries but also in other educational and governmental institutions. The ways by which digital natives seek, organize and retrieve information will likely shape several professions including that of our own. For instance, Facebook users (mostly digital natives) spent more than 120 billion minutes collectively (or more than 83 million days) over a period of just one month (October 2008) (Social 2009). Contrary to the Google’s mission of “organizing the world’s information”, Facebook wants to organize “the world’s people”. Such social networking sites and virtual spaces where digital natives congregate, spend time and “live” will attract more resources and services.

It is not enough for libraries, then, to try to be “virtual destinations” but, rather, they have to strive to move their resources and services to the network where digital natives and digital immigrants learn, work and spend time together virtually (Tonta, 2008, p. 8; Tonta, 2009). In libraries’ part, this requires “connectivity, communications, and content” (Social, 2009) so that library resources and services can be more visible and usable from within social networking systems. This seems to be the way forward for libraries if they are to tackle the impact of the convergence of technologies and the convergence of people’s social lives.

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