Chandos Information Professional Series

New Approaches to E-Reserve

Linking, sharing and streaming

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Introduction

How e-reserve responds to a changing user culture and copes with issues and challenges

E-reserve service in libraries has been in existence since the 1990s. It was started as an electronic counterpart of print reserve (or paper reserve), which has a much longer history, dating back to the nineteenth century. Both reserve services have the same objective: facilitating students' access to course-related materials assigned by faculty. Reserve materials include copies of journal articles, chapters from books or entire books, exams, tests, videos, CDs and lecture notes. In the case of print reserve, students visit the library and check out the physical materials for several hours or days. E-reserve, on the other hand, provides 24/7 online access to these materials. As long as there is access to a computer and the Internet, students can simply click on electronic links to documents or audio video files to view or hear the full content.

How libraries and universities respond to the changing user culture

E-reserve is constantly evolving and adapting to the changing technological and educational environment. These changes are in line with the challenges that confront libraries – a basic shift in user culture and learning behavior. Technology has undoubtedly played a large role in shaping a culture that values portability, connectivity and social interaction, not only in one's personal life or a recreational setting but also in the working and educational environment. Universities currently cater to three distinct generations of students, the 'Baby Boomers' born in the post-war era

1945–59, the sixties and seventies-born 'Generation-X', and new students of the 'Millennial' generation born in or after the year 1982 (Oblinger, 2003). Millennials have also been referred to as the Internet Generation, Echo Boomers, the Boomlet, Nexters, Generation Y, the Nintendo Generation and the Digital Generation (Raines, 2002). Almost all the Millennial generation of users possess cell phones, MP3s, iPods, digital cameras, notebooks, netbooks and other mobile devices. A mobile devices survey run in November 2008 at Ryerson University in Toronto, Ontario, Canada, found that only 3.2% of participants do not own a cell phone, 77.2% of those surveyed own regular cell phones, 20.7% already own smart phones, and an additional 64% intend to purchase a smart phone as their next phone. In addition, 32% would purchase a non-phone mobile device with WiFi Internet access such as an iPod Touch. The survey was completed by 811 people, 84% of whom were undergraduate students (Wilson, 2009). Their portable and digital gadgets have features that integrate listening, viewing, downloading and sharing of audio visual data and instant messaging that is voice-based, text-based, and picture-based. They are used to the convenience of wireless Internet access, searching aids such as GPS and audio visual displays such as Webcams and are accustomed to being able to connect with anyone or any place they wish, regardless of geographic location and time. Wikis and social bookmarking encourage the sharing of reading and writing experiences and sites like Facebook, Twitter, YouTube, and Flickr have pushed the envelope of social interaction and file sharing to the maximum. A person can share his or her photographs, videos and broadcast his or her own thoughts and ideas, and record and disseminate any daily life activities with any group that has a common interest. The Millennials have distinct learning behaviors such as preferring teamwork and experiential activities, use of technology for communication via email or instant messaging and socialization (Oblinger, 2003). They have the 'information-age mindset' including 'zero tolerance for delay', 'multitasking way of life' and 'staying connected' (Frand, 2000: 16–22). They are accustomed to 'multiprocessing' (Brown, 2000: 13) – listening to music, talking on the mobile phone and using the computer. Frand (2000) concurred that they are able to watch TV, talk on the phone, do homework, eat, and interact with their parents all at the same time. Indeed, this generation can do many of these things simultaneously. Their multitasking abilities are boundless.

In the face of these changes in user behavior, characteristics, preferences and expectations, how can libraries remain untouched by this new digital culture? How can libraries still expect students to access materials only available during certain hours and at a certain location? How will

students react to a Web page loaded with library jargon, a language almost completely foreign to them, which requires them to search high and low before finding an answer to their question? Colleges and universities are changing their public image from a protective ivory tower to a more accessible, networked and communication-rich environment (Hanna, 2003). Libraries have also changed significantly in recent years in their design and delivery of services, from mainly collection-based to user-centered or user-driven environments. Print journals have given way to electronic and online subscriptions, including archival storage, providing the flexible access users desire. E-books are becoming more popular for the same reason. Videos-on-demand and streaming of multimedia on the Web are beginning to replace the VHS and DVD formats and physical viewing stations, increasing the ubiquity of access. Virtual reference has tremendously improved upon 24- and 48-hour email reference services in offering real-time interactive chat, often during hours the physical library is closed. Libraries are providing connectivity, demonstrating sensitivity to users' preferred search modes, and accommodating students' own preferences, allowing them to install widgets to a personalized iGoogle or NetVibes home page in the library catalogue. Google Books links can be added to the library's online public access catalogue (OPAC), enhancing the user experience by providing full text searching and previews. These links enable users to read passages of the book online before venturing into the library or placing a hold on unavailable materials. Libraries are investigating ways to provide resources and services to students' mobile devices, including cell phones, and iTunes U allows users to download audio or video course materials to their portable devices. Universities as a whole are responding to the changes in student culture and learning behavior, and academic institutions are offering a blended or hybrid learning environment, even to on-campus students. Virtual learning environments (VLE), course management systems (CMS), or learning management systems (LMS) are now commonplace, giving students the one-stop shopping experience of online learning, including interacting with instructors and peers, submitting assignments, receiving grades and maintaining their own e-portfolios.

Ryerson University Library has been proactive in responding to this Millennial digital culture. Ryerson is an urban university with a student body of approximately 25,000 undergraduate and graduate students. It is known for its innovative programs built on the integration of theoretical and practical learning, with more than 95 undergraduate and graduate programs, distinguished by a professionally focused curriculum. Ryerson

is also a leader in adult education, with the largest university-based continuing education school in Canada.

In 2008, the Ryerson Library programmer initiated several projects to expand access to resources beyond the traditional confines of the building and the Website. These included integrating the library with Facebook, creating widgets for NetVibes and Google home pages, integrating library catalogue holdings with Amazon, Google Books and Indigo/Chapters Bookstore, and enabling text messaging from the library catalogue (McCarthy, Banerjee & Wilson, 2008). Once users have configured their Firefox browser using the library's instructions, they can easily see whether the Ryerson Library owns books, and view their current status from Amazon, Google Books, and Indigo/Chapters. The text messaging feature allows patrons to send title, call number, and location information to their cell phones and then view it later on their phone when they arrive in the book stacks (Wilson, 2009). In September 2009, Ryerson Mobile Applications (R mobile) went live. These applications are being developed by a multi-disciplinary team of student, staff and faculty representatives from the Library, Computing and Communications Services, Department of Computer Science (Ryerson Ubiquitous and Pervasive Computing Lab) and Students in Free Enterprise (SIFE). The following R mobile phone apps have been developed in response to student need: campus maps, campus directory, news and events, student schedules, booking library study rooms, finding available computers on campus, and accessing the library catalogue. Because of these mobile and texting enhancements to the libraries' digital environment, it is now common for students to come to the reference desk, show staff their phone display and say, 'I want this book.'

As librarians from Ryerson University, the authors of this work have intimate knowledge of these developments that respond to the changing needs of students. Ryerson Library's experiences will be discussed throughout the book, in addition to extensive literature reviews, library visits, surveys and communication with colleagues at conferences and other venues. Also included are examples from other parts of the world, such as Australia and Hong Kong, to provide a context beyond North America.

Overview of e-reserve

Chapter 2 provides an overview of the various approaches to electronic reserve that support the changing user culture. Traditional e-reserve was a

standalone system, maintained by library staff. Hard copies of documents provided by faculty were converted by staff to digital formats, and then added to the OPAC of an integrated library system (ILS) such as Innovative Interfaces. The ILS may also contain a sub-module for handling e-reserve materials. Alternatively, some institutions have developed home-grown, dedicated systems or purchased a commercially produced system specifically designed for e-reserve support (such as Docutek's ERes). A newer route of delivery is via the Virtual Learning Environment (VLE), the Course Management System (CMS) or Learning Management System (LMS), which are often the academic institution's portal. Notable examples of these systems include WebCT, Blackboard and Angel. Open-source software that permits others to use, change, modify and redistribute content has emerged as an alternative to proprietary CMS, LMS, or commercial e-reserve systems. Free, community source and educational software that can be utilized as course management systems include Sakai and Moodle. ReservesDirect, also open-source software, was designed by Emory University in the United States, specifically to support e-reserve operations. Others have implemented creative alternatives to e-reserve systems and free products and software purchased for other purposes have been adapted to meet the library's needs while avoiding additional system costs. Examples include integrating the university's digital repository with their CMS/LMS, utilizing citation management software such as RefWorks, or employing iTunes U to deliver audio and video files.

Traditional and creative approaches to e-reserve

Chapter 3 explains in detail, using Blackboard as an example, how libraries can achieve integration of e-reserve with CMS/LMS in various ways. CMSs or LMSs are often administered by the academic institutions' Information Technology (IT) staff. The course shells (the area in the CMS/LMS where faculty create documents and set permissions for access) are controlled by faculty, who may not want access by a third party like library staff. Some libraries are therefore not able to make full use of the e-reserve module within a CMS/LMS like Blackboard, for linking and loading records. Instead, workarounds are created such as a building block between Blackboard and a library-created database of e-reserve content or importing cartridges of pre-created readings into Blackboard course pages.

Chapter 4 describes creative approaches to e-reserve, utilizing or adapting software not specifically designed for creating online readings. An institution's learning or digital objects repository includes the digital output of faculty and students created in the course of learning, teaching, research, and class assignments. The objects include lecture notes, theses, dissertations and multimedia projects. Library resources such as scanned book chapters, online journal articles, audio, video and image files may also be part of the digital content and selected as course materials to be integrated with the VLE, CMS or LMS.

The emergence of Web-based citation software provides another opportunity for innovation in e-reserve. RefWorks is a Web-based citation manager that allows users to collect, save and organize bibliographic citations to journal articles, books, Websites and other sources that were found during research. With it users can create correctly formatted bibliographies in the style of their choice. RefWorks is described as an example of using citation management software to create links to course readings, as well as providing the added value of correct citations and facilitating communication between instructor and students on a specific reading.

iTunes software was originally designed as a distribution channel for purchasing and downloading music to an iPod. New generations of iPods include color display for content such as music videos, movies and television programs that users can purchase or rent through iTunes. A further development for educational purposes is iTunes U, allowing colleges and universities to reach a wide audience for marketing, recruitment or public relations purposes. Some institutions like Stanford University in the United States and the United Kingdom's Open University have made use of the free iTunes U platform to deliver educational materials, such as lectures, interviews, promotional videos, podcasts and video tutorials to the public. While the authors could not identify an institution using iTunes U specifically for e-reserve purposes, there are examples of integration between iTunes U and CMS/LMS. Potentially, iTunes U could be utilized as a platform for instructional audio and video content integrated with a course.

Chapter 5 focuses on another format of e-reserve – video streaming. The case study of the development of a streaming project at Ryerson University Library illustrates the difficult issues involved. There were technical issues such as bandwidth, media platforms and also copyright constraints. There were choices to be made, as streaming options include in-house digitization, acquiring digital rights for individual streamed videos to be shown to restricted groups, or negotiating a campus-wide subscription to media databases.

How e-reserve responds to changes and issues encountered

The delivery of electronic reading lists on a chosen platform is one thing. The management, processing and maintenance of these readings can be a very different matter. Most course management systems do not have a sophisticated e-reserve module that addresses the complexities of the e-reserve process and copyright is a major concern. Most users, faculty and students alike, expect everything they need or want to be available in its entirety – free, downloadable, and accessible anywhere, anytime. However, under the current copyright legislation in many countries, libraries are not always able to reconcile users' needs or expectations with copyright constraints. Staff and patrons have to grapple with the ambiguity of fair use or fair dealing applications in the digital education environment in order to comply with the law. Keeping track of document access for royalty payment purposes or seeking copyright permissions for documents deemed to be not fair to the interests of the creators or authors are still common tasks that require the support of a well-structured database.

What constitutes links to electronic documents or other non-text materials such as videos? Apart from outlining the various e-reserve systems or software, Chapter 6 explains fully what URL stands for, why links break, and how to create a stable URL or permanent link and embed it in a course document. Scanning print material is one way of creating an e-reserve document. Links to electronic materials can be created in a variety of ways, such as copying and pasting the URL of a Web document or making use of an OpenURL link resolver, like SFX, to present all links to currently available article databases. The advantage of the SFX approach is that students will encounter a consistent path to library materials, whether from the library catalogue, journal article menu and databases, Wikipedia, Google Scholar or the institution's course management system. E-reserve documents are not limited to single chapters of books or articles, as links can be made to e-books, playlists created in a multimedia database or streamed video. Indeed, e-reserve's role has expanded to integrate with the wide array of digital resources and services offered by the library and the many different facets of online learning provided by the parent institution.

User perception, expectations and satisfaction present the next big challenge to e-reserve operations. How can libraries make users understand that not everything is free, when they seem to be able to obtain information

free from the Internet? How can library staff explain why users cannot find the required readings as easily as they Google Internet resources, why whole books cannot be scanned and printed as they wish? Library database metadata and search strategy design, copyright, digital licenses, technical infrastructure, and other barriers all play a part in this apparent failure to measure up to users' expectations, and in their lack of understanding of e-reserve. For staff and e-reserve operations, the impact of cost, copyright restrictions and subsequent record keeping is the most tangible issue. For users, access to e-reserve content via a different system, especially if password protected, creates an extra authentication step and inconvenience. E-reserve is faced with more competition than traditional print or paper reserve (which only has to compete with course packs created by universities' bookstores for sale to students). In the case of online course readings, faculty have a variety of alternatives to choose from to allow access. They may not want to learn a new LMS or CMS or any system at all, and simply deliver information via their own Web page. There are commercially produced packages currently on the market, claiming to provide comprehensive content for customized selection. Some of them provide added value to the learning process by offering features such as quizzes, film strips, grading, and discussion boards, thus taking on the role of a learning management system as well as being a content provider. Another example of competition with e-reserve arose with the emergence of podcasting, providing an accessible option for audio visual content such as lectures and seminars and other presentations. Through user friendly publishing tools, faculty do not have to go through the library to post their learning materials on the Web. Chapter 6 discusses some of these complications faced by e-reserve operations.

Strategies to deal with challenges

Whatever challenges are ahead for e-reserve, *integration*, *collaboration* and *interaction* are keystones for survival and service expansion. Challenges often provide the opportunities for creative exploitation of existing resources, and formation of new alliances with other library services and stakeholders within the institution. Partnerships can flourish among groups sharing the common objective of enhancing the teaching and learning process in the new digital world, and the new approaches to e-reserve are indicative of strategies necessary to cope with the challenges brought about by change. To embrace these as opportunities and to make

the most of them is to succeed; to dodge and avoid them is to eventually be swept away. In the final chapter (Chapter 7), the authors offer insights and learning experiences, and provide examples from other academic institutions on ways of addressing these issues. The case study of Ryerson University Library's E-Reserve operation is a microcosm of the strategies for dealing with change. Within a few months of its inception, the service was quick to seize the opportunity to grow, moving from delivering electronic readings solely via the OPAC, to collaborating with the university's IT department to embed e-reserve within Blackboard (Ryerson's course management system) as well. The Ryerson Library's willingness to take risks and its openness to collaboration was further illustrated by the adoption of the SFX link resolver to generate e-reserve article links, the experiment with RefWorks' RefShare to encourage faculty to create their own links, and the administrative support provided by the library to Distance Education for obtaining digital rights for video streaming. While Ryerson's E-Reserve unit may not be in a position to alter the copyright climate independently, the positive attitude shown by taking on the promotion of copyright literacy within the university was a step towards this goal.

Systems limitations can create another group of challenges. As Ryerson's E-Reserve service became more popular with faculty and students, staff increasingly felt the constraints of utilizing the e-reserve sub-module within Blackboard. Course management systems cannot provide the support desired for large-scale processing of faculty requests and copyright files management, and creating a separate database on MS Access and Excel was not efficient either. Ryerson Library had to start thinking about how to integrate a dedicated e-reserve system with content delivery within Blackboard.

E-reserve display can have an impact on user satisfaction as the organization of content and linking levels can influence ease of use. On the users' side, there was sufficient feedback from students to warrant a review of the practice of using the SFX menu of article access options versus a direct link to the document full text.

External competition is constant. Within and without the institution, other educational stakeholders are exploring ways to support the new digital culture and user learning behavior. Some examples include publishers' digital course pack initiatives and advances in online audio visual access. Faculty are increasingly drawn to the open access movement to avoid the copyright permission process, so e-reserve will have to continually evaluate its usefulness and effectiveness in satisfying users' needs and be prepared for radical changes, administrative or technological, when necessary.