LIBRARIES AND E-LEARNING

Final Report of the CARL E-Learning Working Group

November 2005

November 18, 2005

Mr. John Teskey
President, CARL
University of New Brunswick
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P.O. Box 4400 Fredericton NB E3B 5A3

Dear John,

Please find enclosed the Final Report of CARL E-Learning Working Group.

The Working Group's terms of reference are:
 1. To review the literature on libraries and e-learning, in Canada, the U.S. and internationally, particularly in regard to best practices, learning outcomes, learning objectives and repositories
 2. To identify, consult and work with major political partners including Canadian and regional initiatives and organizations in regard to online learning, e.g. CMEC, AUCC, etc.
 3. To develop a CARL policy statement and position paper on the role of libraries in e-learning
 4. To report regularly to the Board and to the membership at General Meetings
 5. In conjunction with the Treasurer of the Board, to draw up an annual budget for the work of the Working Group for submission to the Board of Directors

 The Working Group will submit a final report to the Board by January 31, 2006.

I am pleased to report that the Working Group has accomplished the following activities:
 A) Commissioned a report from David Porter in fulfillment of item No. 1.
 B) Made recommendations in the Final Report to further the direction envisioned in item No. 2
 C) Prepared an Interim Report in partial fulfillment of item No. 3, for discussion at the September 19, 2005 CARL SCOM Committee teleconference before being presented to the Board. An e-learning policy statement has been developed, based on the content and recommendations in the Interim Report; it will be presented in both English and French along with the Final Report to the Board.
 D) A report to SCOM and the membership was made at the 2005 Annual General Meeting.

The Working Group looks forward to its recommendations being implemented in the CARL Strategic Plan.

Yours sincerely,

Lynn Copeland
Chair, CARL E-Learning Working Group

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Executive Summary

Library resources and services are integral to academia as a primary knowledge resource for both research and teaching. As new and better information technologies have emerged, libraries have been early adopters of new information systems and services and have become institutional access points for digital knowledge resources such as online journals and special media collections. Not surprisingly, as faculty and instructors have begun to adopt e-learning strategies as a part of their teaching repertoire, libraries have played a key role, helping to find and organize resources to complement programs and courses making use of e-learning, and to provide support as students work their way through their assignments.

The value of library electronic resources is demonstrable. Yet few if any of the research studies on the scope and scale of current e-learning activities acknowledge the contribution of reference libraries or librarians in the models of practice they describe, signifying a potential loss in quality of the academic experience to researchers, teachers and students.

To support access to electronic resources, libraries organize online tools to provide metadata for online materials, link online index entries to individual journal articles online, and provide mechanisms for requesting printed articles. Software such as the COPPUL/SFU *reSearcher* suite and the Ontario *Scholars Portal* integrate searching, reading, requesting and citation management to strengthen to quality of online research, and should be integrated into appropriate course modules. CARL libraries are engaged in an institutional open archive initiative which will result in their acting as repositories for a variety of materials produced by researchers and of interest in the learning object repository context. CARL libraries are also involved in a variety of digitization projects and CARL is in the process of coordinating the development of a national digitization strategy.

E-learning technologies are increasingly available within the academic community. Uses of these systems can often be characterized as a "push" type of instructional service, optimized for serving large numbers of students using a digital version of traditional didactic instructional methods. Libraries on the other hand have tended to work under a different paradigm, providing students with access to online systems that allow them to "pull" information from catalogs, databases, and special collections to suit their learning or research needs. The notion of "pull" is a model of service congruent with more progressive higher education teaching and learning models. Thus librarians must be integral to the decision-making process when it comes to selecting and implementing a campus-based learning management system (LMS) and determining best practices.

CARL librarians are participating in e-learning initiatives by providing online and in person instruction modules, guides, subject and class-based lists, as well as reference (synchronous and e-mail). In 2002–2003, over 330,000 students at CARL institutions were instructed in using library resources, including online resources; these numbers are growing. CARL librarians offer classes and courses on research strategies, help students in determining useful scholarly resources, work with faculty in planning and developing distance education courses.

Within the context of the Canadian academic scene, academic research libraries should play a guiding role in the consolidation of shareable resource libraries, the provision of digital rights management for instructional resource libraries, and the facilitation of interconnections between federated library systems. However, libraries have had only limited formal representation in large Canadian research projects. This is a gap which must be addressed proactively through CARL.

The opportunity exists for CARL and CARL libraries to lead in the consolidation of Learning Object Repositories (LOR) management and licensing practices, and in turn bring an orderly approach to

management and use of shared instructional resources by institutions of higher learning across Canada. To do so requires that CARL and its member libraries assume a proactive policy position.

Libraries are at the forefront of knowledge when it comes to systems and services that suits the needs of information seekers. It remains for them act at the institutional, national and international level to ensure that this knowledge is brought to bear in e-learning to benefit teachers and learners directly.

Introduction

Diana Laurillard, author of *Rethinking University Teaching* (Laurillard, 2002) reiterated what should be a commonplace: that "A university is defined by the quality of its academic conversations, not by the technologies that service them." Laurillard was emphasizing that when faced with a proliferation of networks and learning technologies, faculty, students, research, learning and teaching must remain at the core of what defines a formal academic experience. Similarly, Oblinger and Hawkins (2005) assert that "E-learning will have an increasingly important role in higher education. However, the 'e' will slip into the background. The technology is taking its proper place as an enabler rather than as the focus. Students don't focus on the technology; they focus on what they want to accomplish. They come to college to learn." While it is important that we appropriately harness the power of technologies to serve our teaching needs within the academic community, it is imperative that we continue to keep research, learning and teaching at the centre of our focus when we employ educational technologies.

E-learning encompasses research, learning and teaching in the digital environment; e-learning includes courses that are offered fully online, courses that mix face-to-face and online access to instruction and course materials (often called blended learning), and courses in which instructors post notes and materials for students or provide access to online discussion forums on course topics. Its growth in higher education has been dramatic over the past five years. Estimates of growth when compared to conventional face-to-face teaching in higher education range from 20 to 30% per year, depending on the jurisdiction measured and the manner in which e-learning is described (CISO, 2005; Sloan-C, 2004).

Many of the innovative practices that have been developed and implemented to support e-learning have an influence far beyond online teaching; reaching into the classrooms and laboratories of campus-based instruction. With many courses in universities now expecting students to be active users of Internet resources, databases, and discussion groups, the distinction between what encompasses e-learning and what is simply an exemplary resource-based classroom-learning model is becoming increasingly blurred. All of the models for online instruction benefit in some way from the services offered by libraries.

Library resources and services are integral to academia as a primary knowledge resource for both research and teaching. As new and better information technologies have emerged, libraries have been early adopters of new information systems and services and have become institutional access points for digital knowledge resources such as online journals and special media collections. Not surprisingly, as faculty and instructors have begun to adopt e-learning strategies as a part of their teaching repertoires, libraries have played a key role, helping to find and organize resources to complement programs and courses making use of e-learning, and to provide support as students work their way through their assignments.

Libraries and E-Content

The Value of Library E-Content

The value of library electronic resources is demonstrable. A study noted that

> *"as a result of the increasing availability of electronic resources, researchers have identified electronic journals as critical to their work. They cite improved access which results in savings in time, and thus, increased productivity."*[1]

In 2003–2004, CARL academic libraries subscribed to 272,108 electronic journal titles, for the first time representing over fifty per cent of their serials subscriptions, and the number is growing.

Another study noted that

> *"Scientists who read more tend to get achievement awards and other special honors. In universities, those whose teaching has been honored read about 26 percent more articles, while those honored for research read about 33 percent more articles. 'Use value' [was] examined through several indicators, including perceived effects on scientists' activities and their productivity. Nearly all university readers (95 percent) indicated some favorable outcomes from some of their readings. They said two-thirds of the readings improved the quality of teaching, research, or other activity for which they read the article. Reading helped [scientists] perform the activity better (33 percent of readings), faster (14 percent of readings), or saved them time or money (16 percent of readings)."*[2]

Studies of research productivity in Canadian, British, and American universities confirm that access to library resources are significantly related to research productivity. Institutions desiring to increase research productivity are advised to target library expenditures and new technology.

Dundar and Lewis examined data from U.S. Research institutions and determined that institutional library expenditures were a positive factor, among others, in determining the average number of papers published per faculty member. [3]

> *"Public schools that have well-stocked, well-funded libraries run by professionals and that involve the library in curriculum development produce students that do significantly better in standardized testing... Performance improvements of between 3 per cent and 15 per cent exist even after taking into account ... ethnicity, socioeconomic status and class size."*[4]

The quantity and value of this content is dramatic; regrettably, few if any of the research studies on the scope and scale of current e-learning activities acknowledge the contribution of reference libraries or librarians in the models of practice they describe, signifying a potential loss in quality of the academic experience to researchers, teachers and students.

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[1] C. Jenkins. User studies: electronic journals and user response to new modes of information delivery. Library Acquisitions, 21, 1997, 355-63.

[2] Carol Tenopir and Donald W. King, Designing Electronic Journals with 30 Years of Lessons from Print. Journal of Electronic Publishing, December 1998.

[3] H. Dundar and D. Lewis. Determinants of research productivity in higher education. Research in higher education 39(1998), 607.

[4] Globe and Mail. June 10/02 (research of Keith Curry Lance, Dir. Colo Dept of Ed. Library Research Services)

"Remote access to library catalogs and finding aids integrates travel efficiency into scholars' programs of research ...use of technology makes the research process easier, faster and more up-to-date."[5]

To support access to these crucial electronic resources, libraries organize online tools to provide metadata for online materials, link online index entries to individual journal articles online, and provide mechanisms for requesting printed articles, with electronic desktop delivery promised in anticipated copyright legislation. Through Interlibrary Loans, libraries borrowed or lent almost a million items in 2000-01; faculty and students are able to submit requests directly to the supplying institution on the basis of a citation in an online index.

The importance of library resources to the best quality research and teaching is dramatic:

Perhaps the most extensive example of the success of national collaboration among libraries has been the Canadian National Site Licensing Project (CNSLP, now Canadian Research Knowledge Network CRKN http://www.crkn.ca), which has seen $50 million in Canada Foundation for Innovation (CFI) and matching provincial and institutional funds contributed toward the licensing of over 2,000 electronic journals and other resources over three years. Regional consortia negotiate a wide variety of other licences for online journals, reference materials and index/abstracts, collaborating informally to achieve further savings. These agreements not only significantly reduce institutional costs, but also are a key way of supporting multi-institutional research, particularly where smaller institutions are involved.

These initiatives are a remarkable achievement in providing researchers across the country with equal access to materials and have been noted at the political level. The Ontario universities' Scholars Portal represents a model of how this could be achieved, See http://scholarsportal.info/.

Access to Government Information

CARL libraries played a pivotal role in negotiating free access to census data and online maps for Canadian researchers and students. Such databases are key to research success.

"The Fulbright Study showed a strong association between high levels of local data support and good performance. Nearly all researchers [supported the] view that local data services are a key factor in the production of highly cited research publications... There are also strong a priori grounds for associating data support with good research performance. The evidence for growth in quantity and quality of empirical research is very strong."[6]

Reciprocal Borrowing

Most university libraries throughout Canada participate in a reciprocal borrowing agreement which allows faculty, staff and students from other universities to obtain a library card and use their collections, thus allowing researchers and distance students access to physical collections closer to their home base. Such service could be strengthened by allowing individuals to be authenticated from their home institution's patron record when checking out books or using online resources, rather than requiring paper validation and duplicate records in both library's systems. Such processes need to be articulated with other cross-institutional online research authentication requirements.

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[5] Brockman, W.S., Neumann, L., Palmer, C.L, Tidlilne, Tonyia J. Scholarly Work in the Humanities and the Evolving information environment. Digital Library Foundation, Council on Library Resrouces, Washington, DC., 2001, p.28.
[6] M. Cave, S. Hanney, M. Kogan, and G. Trevett. The Use of Performance Indicators in Higher Education. Jessica Kingsley, London, 1989.

Interlibrary Loans

Most CARL and regional library organizations participate in agreements to reduce or eliminate Interlibrary Loan charges for monographs, to provide online requesting linked to index/abstract databases, and to expedite delivery between one another.

Software Development and Library Portals

Software such as the COPPUL/SFU *reSearcher* suite and the Ontario Scholars Portal integrate searching, reading, requesting and citation management to strengthen to quality of online research, and should be integrated into appropriate course modules. Libraries employ a variety of e-journal and digital management software (ContentDM, SFX, CUFTS, DSpace) and create and manage the related metadata. This has tremendous potential for the e-Learning community.

Institutional Repositories

CARL libraries are engaged in an Institutional Open Archive Initiative which will result in their acting as repositories for a variety of materials produced by researchers (theses, conferences, background materials relating to published research, student papers, and course modules.). See http://www.openarchives.org/ . In the United States, MIT is among the leaders in this process, with its DSpace management Open Source software being of great potential. The CARL Open Archive Initiative project is intended to demonstrate the feasibility of single entry point access to the variety of documents and metadata at the different sites. This will be of interest in the Learning Object Repository context.

Digitization Projects

CARL is in the process of developing a National Digitization Strategy. CARL libraries are involved in a number of digitization projects with a specific focus on research materials; this continues the vision of distributing access to unique or rare research materials actualized and funded in large part by CARL (in the longstanding Canadian Institution for Historical Microreproductions duplication of thousands of rare or unique Canadian documents held at a variety of institutions is now available at each CARL library). CIHM is now digitizing many of these materials. Individual library projects include: The University of Calgary, Université Laval, University of Toronto, Simon Fraser University and the University of Victoria are creating an invaluable online resource of local histories in *Our Roots/Nos Racines*. University of Alberta is digitizing 'Peel's Prairie Provinces' of materials relating to the history and culture of the Canadian Prairies. In the proposed Synergies project, social science and humanities academic and literary journal publishers will collaborate with CARL libraries such as the Université de Montreal, University of Calgary, Simon Fraser University and the University of New Brunswick to transform the opportunities for scholarly research through moving to online publishing of these journals plus access to the back files in electronic format. The benefits are obvious for collaborating scholars at different institutions or remote from their home institution.

Libraries and E-Learning Technologies

E-learning technologies are increasingly available within the academic community with campuses adopting particular brands or styles of online instruction, often at high cost both for purchase and ongoing support. Increasingly, large numbers of staff are required to service the e-learning infrastructure of a university, commonly through the deployment and support of a learning management system (LMS) such as WebCT, Blackboard, Desire2Learn, ANGEL (University of Waterloo), MOSST (Simon Fraser University), or Moodle. Uses of these systems can often be characterized as a "push" type of instructional

service, optimized for serving large numbers of students using a digital version of traditional didactic instructional methods.

Libraries on the other hand have tended to work under a different paradigm, providing students with access to online systems that allow them to "pull" information from catalogs, databases, and special collections to suit their learning or research needs. The notion of "pull" is a model of service congruent with more progressive higher education teaching and learning models that Laurillard (2002) and other researchers have cited as the underpinning of exemplary instructional services.

Librarians must be integral to the decision-making process when it comes to selecting and implementing a campus-based LMS and determining best practices.

The OCLC E-Learning Task Force (McLean & Sander, 2003) examined a number of issues related to the integration of library and learning management system functions, and concluded that both students and faculty require complementary tools and services to participate successfully in online teaching and learning environments. The OCLC task force identified system requirements for technical, functional, and cultural aspects of e-learning that needed to be considered when systems are selected and deployed. The OCLC recommendations constitute a general-purpose set of best practice requirements:

Technical and Functional Requirements

- display and integrate a variety of information windows as part of a learning activity
- aggregate access (discovery and exchange) to content in any given learning context
- provide bibliographic tools that permit easy searching and reference completions
- provide access to tools that render and present content in user-customized formats
- integrate plagiarism software into course management systems to encourage good practice and to assess reliability of content

Technical and Cultural Requirements

- embed library resources in course management systems
- integrate third-party commercial information services
- customize portal facilities for storing personal preferences
- provide easy access to virtual reference services at the point of need
- embed training modules to assist in information seeking (McLean & Sander, 2003)

In other words, resources must be integrated at the point of need to be most effective; a single login should provide access to all course components, including non-course-related, institution-wide modules such as a plagiarism component; direct links to software (links to e-journal articles and other content, ILL requesting, online reference) and content resources as well as LMS modules should be embeddable within the course. Regrettably, methods for linking learning object modules and information resources and content is in its infancy and "workarounds" or less than best practice has resulted, a key reason online learning lags behind in quality, similar to the integration of library services into Distance Education courses. The current status is documented in Library Technology Reports (May 2005, Susan Gibbons, U. Rochester). SAKAI may be unique among LMS developers in establishing a Library Community to identify requirements for full integration of information resources and library services

Librarians as Partners in Teaching and Learning

CARL librarians are participating in e-learning initiatives by providing online and in person instruction modules, guides, subject and class-based lists, as well as reference (synchronous and e-mail). In 2002–2003, over 330,000 students at CARL institutions were instructed in using library resources, including online resources; these numbers are growing.

CARL librarians offer classes and courses on research strategies, help students in determining useful scholarly resources, work with faculty in planning and developing distance education courses (in particular online courses) to integrate concepts of information literacy throughout the curriculum. Faculty support these activities because the ability to articulate information needs, find appropriate information resources and critically assess the results of an online search are key to success in e-learning, and they leave faculty time to concentrate on course content.

Teaching students to find their way through the maze of information on the Internet and to evaluate it is crucial.

> *"If there is no provision of library information resources there can be very little learning, online or otherwise. Libraries serve as information literacy trainers, experts in organizing and providing access to online resources, content providers through digitization projects, and providers of print resources for learners."*[7]

In the case of libraries, what is good for the online student is also good for the campus-based student. As one example, a survey of universities and colleges in Canada showed that institutions offering online courses were more likely to provide their students with access to local and remote electronic library resources.[8]

The importance of this type of library instruction has been demonstrated:

> *"college students' self-efficacy in electronic information searching was significantly higher after library instruction. Furthermore, frequent use of library electronic databases was correlated with self-efficacy, and post training self-efficacy was correlated with grade points."*[9]

In a comparative study at Simon Fraser University of online learning vs. classroom learning for one instruction module, students for whom English was not a first language preferred the self-paced nature of the online learning module. Another study demonstrated that "a positive relationship between academic achievement and use of open shelf library books was established"[10]

CARL libraries and librarians should play a dedicated role in supporting instructors and administrators to realize the potential for e-learning through the provision of service models unique to libraries.

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[7] Canadian Association of Research Libraries. The e-learning e-volution in colleges and universities: a pan-Canadian challenge. Response to the Canadian Advisory Committee for Online Learning in May, 2001.

[8] Carl Cuneo et al. Changes in Canadian Higher Education ICT and Support, 2000 to 2003. Campus Computing International (Canada). (2003).

[9] Ren, Wen-Jua. Library instruction and college student self-efficacy in electronic information searching. Journal of Academic Librarianship, v.26, 2000, 323-328.

[10] de Jager, K. Library use and academic achievement" South African Journal of Library & Information Science, Mar97, vol 65 p26-30.

Exemplary Practices in Library Teaching and Learning

Here are a few illustrative exemplary practices in Library Teaching and Learning among CARL members:

Librarians at the University of Calgary Library have developed web-based modules to support course-integrated instruction sessions, and encourage students to actively follow the librarian's presentation, using their own topics for selected searches. Students receive immediate feedback on search strategies during the session and can return at any time to refresh their skills for subsequent assignments. Reference staff use the materials to guide students in using information resources specific to their assignments at the reference desk. This blended approach to information literacy offers students and instructors the ability to address diverse learning styles, encourage active participation during the presentation, provide 24/7 access, and foster increased student contact with librarians. Student feedback has been uniformly positive and instructors indicate that students are using more resources more effectively. Université du Québec à Montréal developed an interactive web-based tutorial, InfoSphère that can be used either in a library instruction course or by a professor in the classroom or by a user on stand alone basis; including both library information and assignments, it is also used by Université Laval and Université de Montréal.

The University of Alberta participates in a Library Reference consortium offering services 24/7 across North America. The University of Victoria and Simon Fraser University are providing online interactive reference services to each others' students; it is anticipated that this service will be extended more widely to BC Campus students who may be associated with any British Columbia post-secondary institution. Numerous other CARL libraries provide similar chat reference. The value of these services extends well beyond asynchronous (not in real time) e-mail reference or traditional interactive chat support because the software can 'push' page images and allow the reference librarian to step the enquirer through a difficult procedure.

Many university libraries are working with online course developers as well as instructors in traditional courses to provide online guides and help for library research; these include modules that introduce students not only to specific resources, but to critical evaluation of resources, specifics about thesis preparation and the like. As with face-to-face library instruction, these modules are most effective when integrated into course and research material provided by the instructor. This is particularly important if instructors wish to build the mastery of the library modules into the course grade structure. For example, the Queen's University Education Library and the instructors offer an Online Teaching Certificate in the Continuing Teacher Education Program (CTE); this is supported by the library and other resources available through the virtual CTE Teaching Commons. Another module uses a instruction/live interaction split screen for the History of Medicine information literacy module, which is graded. In a psychology WebCT course at University of Saskatchewan, the "Librarian's corner" allows the librarian to answer questions and provide tips for students; one of the weekly mandatory chat sessions is moderated by the librarian.

Nevertheless, with current versions of most Learning Management Systems (LMS's) this can only be done by copying and pasting content. The establishment of a SAKAI Library Community within the SAKAI Educational Partners Program (SEPP) promises improvement in this situation. The University of Calgary Distance Education Librarian keeps Distance Learners Up-to-Date on Library Services through RSS feeds to the Library's Distance Education page and all Course E-Learning Sites and Online Tutorials by posting information to a blog which is distributed either as e-mail or an RSS Feed; a chat icon on the course sites can be used to access the librarian when available.

A further impediment to the most effective integration of online library resources into the student's view of the LMS is that to be available under that login, a student's id must be explicitly associated with the course and a course cannot be imbedded in another course by simply linking it. The desired audience for many library modules often extends well beyond a single course; this would include for example, the plagiarism tutorial at Simon Fraser University, where the "workaround" is to make available a copy for the instructor to explicitly include in the course content. LMS's do provide for LMS- and course-wide links and a small but key step is for the library to ensure its web site and course pages are available in this way at least. For example, UBC library resources such as the eHelp virtual reference service, plagiarism resource centre and library tutorials will be integrated into LEAP (an online academic support portal designed to bring together resources from across campus into a central web location). Similarly, UVic distance courses now include a "Library Resources" section embedded in the CMS, with an introduction to the library services provided through Infoline (the off-campus library service), library tutorials and information pages, links to e-reserve material, and more.

With these limitations, there are nevertheless many exemplary practices in providing online library instruction and working with faculty. Typical of many such practices, UBC Library offers "Library Research Skills for Biologists", a standalone WebCT course require in first year Biology which is automatically populated with student IDs, and used for other distance and mixed-mode courses as a support tool for information literacy instruction (https://www.webct.ubc.ca/public/library_biol_skills/index.html). Another typical model is the UBC Library Medical Informatics Tutorial which is part of the medical curriculum's online program and is supported by in-person instruction by the liaison librarian. All incoming medical students are required to complete it in order to establish a baseline knowledge about information literacy as it relates to medicine. This tutorial also supports the expanded medical program's online instruction program, an initiative of UBC, UNBC and UVIC. A third type of library course is the UBC Library "Virtual Term Paper Clinic", in which undergraduate students and tutors interact in one-to-one instructional sessions using chat reference software. Students are coached on how to find, evaluate and integrate resources appropriate for their term paper projects. The clinic will be integrated into LEAP.

UVIC Library uses its Tutor.com virtual reference software for one-on-one reference and also uses the meeting room component for librarians to have interactive instruction sessions with groups of students, a high-demand service now integrated into several courses. This has proven to be an effective and successful way of providing virtual instruction to our dispersed learners. Using the virtual reference technology, the librarian and students chat, review strategies for effective searches, and search the libraries' databases and resources together. Following the tutorial, the students receive a complete email transcript of the session, and PowerPoint slides reinforcing the material covered are placed on the course WebCT site.

York University Library has developed 11 short film clips using Camtasia Software that demonstrate various aspects of searching in CINAHL and the library catalogue. Ranging from 1–4 minutes, the content includes the information that is covered in the face-to-face hands-on classroom instruction session in the Nursing Program at York University. These clips were developed to support research at the point of need because much of the M.Sc.N. program at York is delivered in a blended or wholly online format. Students who were enrolled in the M.Sc.N. program in May, 2005, received the film clips on CD-ROM.

Learning Object Repositories and Rights Management

Learning Object Repositories

As the availability of network-accessible learning resources increases, there is a growing interest developing in the instructional community to organize and store digital media and resources for use, reuse, and re-deployment across and between institutions. The emergence of the concept of reusable learning objects and learning object repositories has stimulated interest in the development of federated repository networks and search tools to discover libraries of teaching and learning resources that can be applied in specific academic disciplines.

The situation envisioned is a standards-based, interoperable, network-enabled setting in which all members of the academic community can find, use, review, and customize learning resources to suit their instructional needs (O'Fathaigh, 2002).

A case has been made for the scholarship and professional growth opportunities afforded to academics through the creation and sharing of peer-reviewed learning resources with colleagues in particular disciplines or domains of knowledge (Hatala & Richards, 2002; Laurillard, 2002; Littlejohn, 2003; MERLOT, 2004; Richards *et al.*, 2002; Schell & Burns, 2002). Instructional development and learner experience advantages have been posited in situations where continuous improvement of learning resources can be realized through the systematic review and revision of the resources (Porter, 2001; Porter *et al.*, 2003; Wiley, 2002).

In other instances, a theoretical case has been presented for the organizational and economic benefits of sharing learning resources across institutional boundaries to avoid duplication of effort in the multitude of courses that share common learning outcomes (Porter, 2001). As a result of the growing interest in the development of reusable learning resources, research and pilot projects abound that focus on the creation of tools to build and manage distributed databases of learning resources, often called learning object repositories (LOR).

In Canada, the largest of these projects was a pan-Canadian initiative called eduSource Canada (edusourceCanada.ca, 2004) that involved researchers from public institutions and private corporations who were engaged in building a technical interoperability framework, instructional design tools, metadata tools, and digital rights management tools to facilitate the creation and management of shareable learning resources. In other jurisdictions worldwide, similar projects have been initiated to create networked libraries of digital resources, as well as related tools for the development and delivery of online courseware.

An NSERC-funded successor project, LORNET (http://www.lornet.org), continues the LOR research in Canada with a network of researchers located in five major universities spanning the country.

But despite all of the theoretical and technical efforts to rationalize a learning object economy and to build tools that support the operation of such an economy in the higher education context, to date there are very few examples of wide-scale implementation of learning object theory within the practical realities of the higher education domain (Porter *et al.*, 2003). Reasons for this may include the lack of specificity surrounding what constitutes a "shareable or reusable" learning resource. More importantly, what is missing generally are the local software tools and licensing processes that will enable faculty and

instructors to classify, store, organize, search, and retrieve exemplar teaching resources from online databases and federated libraries.

Schemes for learning resource use and reuse, and the digital rights management resulting from such an approach range from pay-per-use models implemented by publishing concerns (CAPDM, 2004), to peer-reviewed libraries with both royalty and non-royalty mechanisms (MERLOT, 2004), to freely usable collections of online objects created within institutions specifically to enable sharing and reuse scenarios between academics (Connexions, 2004).

Libraries have developed their own e-Learning resources and in some cases LORs.

However, no commonly accepted format for the sharing and reuse of learning resources has yet to emerge in the academic domain, and certainly none that actively enables widespread implementation of learning-object theory by providing simple, yet effective management processes for sharing learning resources between academics in multiple institutions and in different countries across the Internet.

At the current time, funding for special projects in the learning resource repository (LOR) domain of practice that have in the past been funded by federal initiatives such as those of Industry Canada and CANARIE, have recently been suspended. This suspension of funding initiatives comes at a time when new models of licensing such as the Creative Commons have been identified and are being adopted in the academic sector.

Such a notion is an extension of the services that libraries have typically provided in academic settings. A key issue for libraries, is to continually identify the added value that libraries and librarians can bring to e-learning to benefit both instructors and learners directly.

Many e-learning and LOR research topics are in the interest domain of academic libraries. Presentations and papers by individuals as well as by members of Canadian library associations have repeatedly pointed out the efficacy of e-learning as an instructional strategy and the utility of involving libraries and librarians in e-learning research projects and policy forums (CARL, 2001, 2003; Copeland & Currie, 2002; Copeland *et al.*, 1997).

CARL libraries and librarians should be able to play a pivotal role in the development, standardization and maintenance of LORs. While there have been many experimental projects launched and evaluated during the innovation phase of learning object repository development, there remains a need to consolidate best practices and implement learning resource libraries in a practical and efficient manner. A practical and efficient approach would include highly usable classification and searching tools, as well as digital rights management schemes that honor the rights of intellectual property (IP) holders as well as those of faculty and instructors who wish to share resources with peers in a more innovative, Internet-savvy, contemporary manner (bccampus.ca, 2005; CLOE, 2005; creativecommons.ca, 2005; creativecommons.org, 2004).

Libraries and Learning Object Repositories

Libraries have a long history of providing online literature searches, inter-library loans, and more recently the deployment of multi-institutional, authenticated networks that allow access to digital journal articles and other electronic resources required by instructors and students to facilitate coursework and research assignments (ELN, 2005).

Within the context of the Canadian academic scene, academic research libraries should play a guiding role in the consolidation of shareable resource libraries, the provision of digital rights management for instructional resource libraries, and the facilitation of interconnections between federated library systems. While these have been the goals of many e-learning research projects, the promise of these projects has not yet matured into the practical and ubiquitous kinds of resources and services that academic libraries provide.

However, libraries have had only limited formal representation in large Canadian research projects such as eduSource Canada, and in particular with the development of metadata specifications such as CanCore (http://www.cancore.ca). This is a gap which must be addressed proactively through CARL.

Rights Management

The closest model to a functioning digital right management mechanism for the sharing and reuse of digital learning resources or other creative work is the Creative Commons (cc) model (creativecommons.org, 2004), a digital copyright and licensing model conceived of by law researchers at the Stanford University Law School. A Canadian version of the creative commons has now been developed. CARL has assisted in this development with the help of the Association's legal counsel.

> *"Creative Commons has developed a Web application that helps people dedicate their creative works to the public domain — or retain their copyright while licensing them as free for certain uses, on certain conditions. Unlike the Open Source GNU GPL license (gnu.org, 2004), Creative Commons licenses are not designed for software, but rather for other kinds of creative works: web sites, scholarship, music, film, photography, literature, courseware, etc." (creativecommons.org, 2004)*

What makes Creative Commons unique and a potential candidate for the rights management of learning resources for multiple uses in the academic setting is its balanced view of copyright and the ownership of intellectual property. Creative Commons draws upon a community of interest like that of the Open Source Software (OSS) community, where the original copyright of a work, usually software code, is held by a developer who makes the software code available for use by others along with a license that requires that all improvements and derivations of the code be made available to a community of interest in perpetuity (Osterloh & Rota, 2002; von Hippel & von Krogh, 2002; von Krogh & Spaeth, 2003).

The OSS community developed its unique approach partially in response to many software companies and entrepreneurs that reserved all rights and restricted access to the original source code, sometimes leaving users stranded when a company was dissolved or no longer supported the product. In academic environments where the use of learning object repositories is planned, a (cc) licensing model may be the key to achieving a federated approach to general resource reuse and repurposing.

The philosophy of the Creative Commons copyright and license scheme has been described as follows:

> *"Too often the debate over creative control tends to the extremes. At one pole is a vision of total control — a world in which every last use of a work is regulated and in which "all rights reserved" (and then some) is the norm. At the other end is a vision of anarchy — a world in which creators enjoy a wide range of freedom but are left vulnerable to exploitation. Balance, compromise, and moderation — once the driving forces of a copyright system that valued innovation and protection equally — have become endangered species. Creative Commons is working to revive them. We use private rights to create public goods: creative works set free for certain uses." (creativecommons.org, 2004)*

The Creative Commons model has been adopted by post-secondary institutions, such as Rice University (Texas) where the Connexions Project (cnx.rice.edu) makes available thousands of reusable learning resources for use by the university's engineering faculty and students. Furthermore, each learning resource in the Connexions library is tagged with a Creative Commons digital deed that allows reuse by faculty and instructors on other campuses worldwide.

Creative Commons Canada, based at the University of Ottawa has introduced copyright and licensing schemes that have the potential to provide more and better creative resources for use and reuse at no or low cost within educational communities.

In British Columbia, the BCcampus project has introduced an Online Program Development Fund (OPDF) and has made $1.5M available for course and program development to BC public post-secondary institutions in each of 2003, 2004, and 2005. The OPDF is designed to encourage development of collaborative programs, courses, and services that BCcampus can offer online. The intent is to make these program and course materials accessible to everyone in the BC public post-secondary sector. A licensing provision of the Fund requires that the products of development become shareable resources within BC. However, the developers (as defined by institutional collective agreements) hold IP and copyright in the materials.

With the BCcampus OPDF there are two licensing options for developers. In addition to a contractual agreement, a license is also put in place for distribution, sharing, and reuse. Developers may choose either the Creative Commons or BC Commons as the licensing agreement for deliverables created through the Fund. The Creative Commons license provides for sharing and reuse with the world, while the BC Commons license provides for sharing and reuse within BC's public post-secondary system. Wide interest has been shown in this approach and this licensing model is available for digital learning resources in Canada and abroad.

Access to licensed or freely available instructional resources and tools continues to be a driver of exemplary online programs. Libraries are in a unique position within their academic domains, having the experience and skills to find, organize, and license resources for use by faculty and instructors; this builds on the role they have often played in the distance education and printed course pack environment. Some university departments are already employing "learning object librarians" or copyright-licensing officers whose role it is to identify, obtain, license, and then make available digital resources for use by faculty in both e-learning and blended learning instructional models.

Libraries and Rights Management

These are roles within the university often with broader scope than one faculty or department. Learning object librarian and licensing officer positions are expanded roles for librarians that cover two aspects of library work which have existed in libraries and are simply expanded to the online context: copyright clearance for course materials and collection building/serials subscriptions. As in the past, this integrated approach to finding, licensing, and making available shareable resources to faculty and instructors there eliminates inequities among faculties and departments as well as the duplication of effort and cost, and builds in a potentially missed opportunity for collaboration on resource acquisitions between and among institutions. Academic libraries often collaborate to support licensing, reciprocal borrowing, and resource sharing models. A new opportunity in the learning object repository space exists for higher education libraries and CARL to play this role.

The opportunity exists for CARL and CARL libraries to lead in the consolidation of LOR management and licensing practices, and in turn bring an orderly approach to management and use of shared instructional resources by institutions of higher learning across Canada. To do so requires that CARL and its member libraries assume a proactive policy position.

Recommendations

General Recommendation

A key issue for CARL libraries and librarians, is to continually identify the added value that they can bring to e-learning to benefit both instructors and learners directly.

Librarians are on the front lines of knowledge when it comes to new systems and services that suit the needs of information seekers. However, there remains a requirement for libraries and librarians at the institutional level, to:

- be proactive in questioning the selection of learning management systems and complementary e-learning tools by faculties and departments, and

- actively seek representation through appointments to committees that deal with selection, management, and governance of online instructional systems on their campuses.

At the national level, to:

- proactively advocate for representation on policy and standards bodies concerned with the pan-Canadian and global aspects of e-learning, including the interoperability between software systems, information management practices, and information resources such as e-journals, e-reserves, ILL delivery (print and electronic to the desktop). Autonomous institutions worldwide will continue to acquire and deploy e-learning systems and it is unlikely that there will be only one system used by all. Consequently, the notion of interoperability, standards, specifications, and application profiles will continue to be a topic of discussion between academic institutions, publishers, and computer vendors for the foreseeable future, and

- advocate for the importance of information literacy to student success.

At the international level, to:

- communicate and collaborate with similar organizations such as the Association of Research Libraries (U.S.), JISC (UK) and CAUL (Australia).

For CARL to play a leadership role in e-learning in Canada the Association must be an active and proactive participant in discussions dealing with the ongoing functional requirements for exemplary online learning resources and systems. Toward this end, it is recommended:

Recommendation 1

That CARL undertake discussions with the following groups about the expertise and value that CARL can bring to research and policy development initiatives:

a. the Canadian Council for Learning (CCL), to assess its potential role in CCL's funded research opportunities, CARL should seek to provide research guidance into standards, services, and policies for the provision of online resources for learning and teaching.

b. the Council of Ministers of Education, Canada (CMEC), following up on its response to the report from the Advisory Committee for Online Learning "The e-learning e-volution in colleges and

universities: a pan-Canadian Challenge" and seeking representation on the E-Learning Standards Advisory Council of Canada (ELSACC). CARL represents a significant interest group with expertise in the classification and provision of e-learning resources for higher education.

c. CanCore, offering to provide its collective expertise in the creation and long-term maintenance of e-learning metadata specifications, bringing to the table librarians' longstanding expertise in this area and suggesting the value of such a sustainable alliance to an organization with similar goals and expertise

d. LORNET, with a view to becoming an "industry partner" in the LORNET project. In addition, CARL should work with its members at LORNET partner universities to represent the interests of research libraries in each of the LORNET research themes and pursue the possibility of developing an information resource/information literacy theme.

e. CARL should build on its role in advocating balanced copyright legislation by working with Creative Commons Canada (CCC) to promote the use of CCC licenses within Canadian universities as a policy initiative. Creative Commons licenses represent an innovative model for making creative works available for use, reuse, and repurposing. Creative Commons and Open Source licensing is an interest area for some developers, faculty, instructors, and students, but its value needs to be promoted more widely to members of the academic community. CARL should play a leadership role in supporting individual innovation and the sharing of digital creative works through its proactive support of Creative Commons Canada, and similar licensing schemes.

Recommendation 2

That CARL provide a community of practice web sites for its members and others. In order that it be a credible member of the e-learning community, CARL and CARL members should demonstrate a commitment to using contemporary tools and practices to support its own organizational goals. This web site should make use of software that provides authenticated member access to discussions groups, mailing lists, online resource libraries, and collaboration software for conducting online meetings and professional development events.

Recommendation 3

That CARL initiate an action campaign to demonstrate library importance and capabilities as an integral component of e-learning to administrators, instructional development units, and teaching faculties on its member campuses.

Recommendation 4

That CARL members be encouraged to individually commit to an action project with at least one instructional development or faculty course development team, and that the outcomes be shared on the CARL online community of practice web site. The examples cited in this paper will form a basis.

Recommendation 5

That CARL seek ways to communicate and collaborate with organizations such as ARL, JISC and CAUL with respect to e-learning initiatives.

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