Saskatchewan Instructional Development & Research Unit

# PHASE 2 FEASIBILITY STUDY: COMPREHENSIVE VIRTUAL RESOURCE-CENTRE ALTERNATIVES RELATED TO FIRST NATIONS ONLINE LEARNING

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by

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# EXECUTIVE SUMMARY

This report was written at the request of the Keewatin Career Development Corporation (KCDC) and in follow up to *A Comparative Assessment of Four Online Learning Programs* (Bale, 2005). This document reports on the findings of the *Phase 2 Feasibility Study*. The foci of Phase 2 of the research were to identify (a) factors relevant to the development and implementation of an online, interinstitutional partnership for virtual resource centre alternatives within and between specific First Nations educational communities, and (b) how such interinstitutional partnerships might be beneficial to a broad constituency of collaborating education agencies.

The report is divided into four main sections. First, a description of the context, including a review of literature relevant to technology and to First Nations communities, a discussion of proprietary and open cultures, and an examination of several existing learning object repositories and their characteristics. The second section describes the research methodology and presents an analysis of the research data. The third section includes recommendations for the establishment of a First Nations learning object repository. The fourth and final section proposes areas for further research.

# ACKNOWLEDGEMENTS

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# RATIONALE

At the request of the Keewatin Career Development Corporation (KCDC) and in follow up to *A Comparative Assessment of Four Online Learning Programs* (Bale, 2005), which urges the establishment of a First Nations Virtual Campus, a *Phase 2 Feasibility Study* was undertaken in the winter of 2006. This study was undertaken in the context of specific First Nations educational communities. The foci of Phase 2 of the research were to identify (a) factors relevant to the development and implementation of an online, interinstitutional partnership for virtual resource centre alternatives within and between specific First Nations educational communities, and (b) how such interinstitutional partnerships might be beneficial to a broad constituency of collaborating education agencies.

This document reports on the findings of the *Phase 2 Feasibility Study*. This report is timely as it takes into account the *The Aboriginal Voice Final Report: From Digital Divide to Digital Opportunity* (i.e., *Aboriginal Voice Final Report*) recent recommendations for "consulting on community needs and technology strategies in areas like … education" (Crossing Boundaries National Council, 2005, p. 14) and responds directly to the report's call for action, particularly Recommendation 19 which states: "Aboriginal training and business organizations, in collaboration with the relevant agencies of government, should undertake an assessment and stocktaking of the potential role of eTraining in developing the Aboriginal workforce and business sector" (p. 22). It is in view of these recommendations, and in response to the interest expressed by the funding agency, that the present research has been undertaken.

# DEFINITION OF TERMS

*Blog*. A website in which items are posted on a regular basis and displayed in reverse chronological order.

> The term blog is a shortened form of weblog or web log. Authoring a blog, maintaining a blog or adding an article to an existing blog is called 'blogging'. Individual articles on a blog are called 'blog posts,' 'posts' or 'entries.' A person who posts these entries is called a 'blogger. A blog comprises text, hyptertext, images and links (to other web pages and to video, audio and other files). (Wikipedia, 2006a)

*First Nations*. Given that online learning programs engage distributed learning populations, and borrowing from The Crossing Boundaries National Council/*Le Conseil national Traverser les frontiers* (2005), in this paper, the term *First Nations* refers collectively to the specific educational communities involved in the study "encompassing on reserve, off reserve, rural and urban populations as well as social and cultural communities of people such as youth or elders" (p. 4).

***Folksonomy***.  An unstructured, socially constructed classification system,

> a portmanteau word combining 'folk' and 'taxonomy,' [and] refers to the collaborative but unsophisticated way in which information is being categorized on the web. Instead of using a centralized form of classification, users are encouraged to assign freely chosen keywords (called tags) to pieces of information or data, a process known as tagging. (Wikipedia, 2006b)

***Free/Libre/Open-Source Software (FLOSS).*** A combined phrase meant to bridge ideas from the open source movement (*libre*) with central ideas from the free software movement.

> While the term has not been wholly accepted by both communities, it is likely the most common term when discussing software which is either freely available or available as open source. Close linguistic derivatives include FOSS (Free & Open Source Software) and FLOSSE (Free/Libre/Open-Source Software in Education). (Couros, 2006, pp. 11-12)

***Learning Management System***.  "A software package, usually on a large scale (that scale is decreasing rapidly), that enables the management and delivery of learning content and resources to students" (Wikipedia, 2006e).

***Learning Object.*** "A reusable unit of instruction for teaching, typically in e-learning" (Wikipedia, 2006c). Three common, slightly varied definitions of *learning object* are:

- Any digital resources "uniquely identified and metatagged, that can be used to support learning" (National Learning Infrastructure Initiative, in University of Wisconsin – Milwaukee, 2005).

- Educational content rendered in "small chunks that can be reused in various learning environments, in the spirit of object-oriented programming" (D. Wiley, in University of Wisconsin – Milwaukee, 2005).

- "any entity - digital or nondigital - that may be used for learning, education or training"  (Institute of Electrical and Electronics Engineers, 2002, p. 5).

***Learning Object Repository (LOR)/Institutional Repository.***  "An online locus for collecting and preserving -- in digital form -- the intellectual output of an institution, particularly a research institution" (Wikipedia, 2006d).

***Learning Object Referatory.***  Is similar to a Learning Object Repository or Institutional Repository in that links are provided to learning objects. However, in the referatory model, the learning objects are stored in sites external to the referatory. Consequently, the referatory acts as a search rather than storage mechanism.

***Open Content.***

> A phrase derived from the term *open source* and refers to any type of creative work (e.g., essays, poetry, photographs, audio, video) that is published in a format that allows, and often encourages, the copying, editing and sharing of that content. Prominent early examples of open content include MIT's OpenCourseWare Project and the Creative Commons. (Couros, 2006, pp. 11-12)

***Open Educational Resources.*** Open Educational Resources (OERs) "make educational materials widely available to a broad-based population of learners and teachers" (UNESCO, 2005). OERs incorporate digitized materials such as learning content, software tools and implementation resources (e.g., open licensing) in an openly available format suitable for teaching and learning.

***Open Publishing.*** A method of publishing content that promotes transparency and supports the processes for publication, commenting, participation and redistribution.

> Blogging (content management) and wiki software are the most common types of open publishing media today, however, many popular open publishing sites rely on portal type packages such as Drupal. Arnison's Law (cited in West, 2005) is helpful in drawing similarities between the underlying philosophies of open source and open content as it reads, 'Given enough eyeballs, problematic content is shallow.' (Couros, 2006, pp. 11-12)

***Open Source Software (OSS).*** Software which has its source code made freely available to the general public. "Open source software can be licensed under various licensing structures (e.g., GPL, BSD) and depending on the specific license, end-users have various rights to modify and redistribute the software, and in some cases, even for commercial purposes" (Couros, 2006, pp. 11-12).

***Open Movement.*** As used throughout this study, it refers to

> A tendency by individuals to work, collaborate and publish in ways that reflect ideals of the open source and/or free software movements. Additionally, the movement also reflects a tendency and a preference by individuals to use tools that are available under FLOSS licenses. (Couros, 2006, pp. 11-12)

***Open Source Culture (OSC).*** Usually refers to a cultural condition where artifacts are made generally available to all citizens. "Participants in an open source culture have the right to use and modify shared artifacts, but are usually required to redistribute these items back into the community if there are changes or improvements" (Couros, 2006, p. 10).

*Podcasting*.  The distribution of audio or video files, such as radio programs or music videos, over the internet using either RSS or Atom syndication for listening on mobile devices and personal computers.

> A podcast is a web feed of audio or video files placed on the Internet for anyone to subscribe to, and also the content of that feed. Podcasters' websites also may offer direct download of their files, but the subscription feed of automatically delivered new content is what distinguishes a podcast from a simple download or real-time streaming. (Wikipedia, 2006g)

*RSS (Rich Site Summary).*  "The technology of RSS allows Internet users to subscribe to websites that have provided RSS feeds; these are typically sites that change or add content regularly" (Wikipedia, 2006h).

*Social Affordances.*  The way in which software is designed to promote or encourage social collaboration and participation.  It is an expansion of the term *object affordance,* coined by perceptual psychologists who advance the idea that certain objects provide suggestions as to how individuals act with and onto them (e.g., if one sees a bench, one may feel they should sit or lie down on it).

*Tags/Tagging*.  See *folksonomy,* above.

*Virtual Campus.*  Is a centralized, online learning space with administrative, pedagogical and service functions. "Its purpose is to provide an integrated learning environment that responds to the unique and varied needs of a distinct, mobile and geographically diverse learning community" (Couros & Brogden, 2001, p. 7).


## CONTEXT


One of the major recommendations identified in the recent report, *A Comparative Assessment of Four Online Learning Programs* (Bale, 2005), undertaken by SIDRU on behalf of KCDC, encourages the establishment of a First Nations Virtual Campus. Furthermore, current trends indicate "aboriginal Canadians have begun to embrace ICT as an essential tool in learning" (Crossing Boundaries National Council, 2005, p. 8). This increasing reality for First Nations learning communities, coupled with recommendations which speak to the urgency of "rapid advancement of Aboriginal eLearning within a framework of lifelong and community learning" (p. 5) are the catalysts for pursuing the present study.

In this section, we describe the academic, cultural and socioeconomic contexts relevant to the development and implementation of collaborative virtual resource initiatives. First is a brief overview of technology in First Nations communities. Second is a description of changing perceptions of *knowledge* as it applies to the emerging open source culture. Third is a discussion of the possibilities and limitations of *learning object repositories*.

**Technology and First Nations Communities**

*The Aboriginal Voice Final Report* (Crossing Boundaries National Council, 2005) positions "new technology as an enabler, a potential platform to help Aboriginal peoples leapfrog social, political, and economic challenges to a brighter, more sustainable future" (p. 4), while acknowledging the need for improving "access to the infrastructure, resources and capacity needed…" for aboriginal communities and people "to fully position themselves for participation in the information society and the economy that underpins it" (p. 4). The report further asserts "developing community ICT awareness and capacity is central to Aboriginal communities and citizens becoming more open to the technology and seeing opportunities within a New Economy context" (p. 13).

In recent years, technological advances within First Nations educational communities in Canada have been influenced by a number of specific decisions made by the Government of Canada. "In the 1997 Speech from the Throne, the government announced its commitment to make Canada the most connected country in the world — the 'Connecting Canadians' initiative" (Government of Canada, 2000). Subsequent to this policy announcement, the federal government undertook a variety of initiatives to promote connectivity throughout Canada. Among these initiatives, Industry Canada was responsible for establishing the following:

- **First Nations SchoolNet.** "Six non-profit Regional Management Organizations (RMO) work with Industry Canada to deliver the program to First Nations schools" (Government of Canada, 2005b) and include:
  - Mi'kmaw Kina'matnewey (Atlantic)
  - First Nations Education Council (Quebec)
  - Keewaytinook Okimakanak (Ontario)
  - Keewatin Tribal Council (Manitoba)
  - Keewatin Career Development Corporation (Saskatchewan/Alberta)
  - First Nations Education Steering Committee (British Columbia).

- **Grassroots.** The Grassroots Program, discontinued following the announcement of new strategic initiatives in the March 2004 federal budget, was "designed for teachers to promote and facilitate the effective integration and use of information and communications technologies (ICT) in the classroom" (Government of Canada, 2003).

- **Network of Innovative Schools.** This project recognized "schools [including First Nations schools] using Information and Communications Technology (ICT) in meaningful and imaginative ways to improve learning" (Government of Canada, 2005a).

While the Grassroots and Network of Innovative Schools initiatives have been discontinued, First Nations SchoolNet and its associated network of RMOs continue to actively support the development of First Nations technology, education and infrastructure.


**Proprietary Culture in an Open Era**

The object of study for this report - the feasibility of online learning environments in specific First Nations communities, as well as the writing of the research findings – is situated at the interstices of participatory and refereed research cultures. Increasingly, technology cannot be studied by the exclusive domains of traditional research culture.

Traditional research culture, where research is performed, written, reviewed through the refereed process, and finally published, is notoriously slow (Downes, 2006). In addition to the delays involved in knowledge sharing within traditional research culture, technological change is happening at such a pace that the object of study may be obsolete long before it is communicated via a traditional, refereed research process.

In 1973, sociologist Granovetter (1983) proposed his now oft-cited sociological theory "the strength of weak ties" (p. 201). Wikipedia (2006f) summarizes Granovetter's argument, noting,

> strong social ties, such as those of close friendships and the nuclear family, are good for exerting power but almost useless for search as a dense network has highly redundant information. In contrast, weak ties, i.e. connections with acquaintances, contain much less redundant information than strong ties, making weak ties very effective at search.

The strength of weak ties (SWT) theory is relevant to network building in the digital age. In building online networks with multiple strands of information, it is important to have many ties to access an abundance of information. SWT also puts into question the necessity of a traditional, hierarchical system for endorsing *knowledge*. Rather than looking for *the* knowledge, it is important for online systems to allow a sharing of a variety of information that may be useful to people who are linked together in often informal ways.

While not losing sight of more traditionally published research, this report also relies on "pretty good knowledge" (Weinberger, 2005), knowledge that is relevant, local, ambiguous and multisubjective. As Weinberger observes,

> The connectedness of the Net has made it too clear that the world is not going to come to agreement and be able to write its single encyclopedia, covering everything we need to know without dissent. Cultures and languages are not

going to go away. But we should not be left in despair because we now also know that for as long as we manage to not to destroy this blue pearl, we're going to be engaged in endless conversation.

Knowledge production via digital communities is often rapid, current, widely disseminated and vetted by an interested citizen population. *Pretty good knowledge* is knowledge that is found in the ongoing conversations of academics who post their thoughts directly to the web, bypassing traditional dissemination channels. Relevant, intellectual conversations are discovered through weblogs, wikis, podcasts and other digital communities. Weinberger (2005) argues, and we agree, that these conversations have become knowledge and that the "continuousness of conversation" in the digital age leads to "an exponential increase in intelligence."

### *Learning Object Repositories: Common (Virtual) spaces*

In researching the feasibility of a shared collaborative learning resource community, it is wise to contemplate current examples of high performance, collaborative communities. From the field of information and communication technology, open source software communities offer valuable insights. Various authors suggest the communicative practices inherent within particular open source communities may represent a form of collaboration that could be beneficial to transforming school organizations. While there has been very little research in this area, calls have been issued to pursue formal inquiry into establishing how such collaborative practice could benefit education. Two such arguments come from Hargreaves (2003) and Kim (2000).

For his part, Hargreaves (2003) maintains "a key to transformation is for the teaching profession to establish innovation networks that capture the spirit and culture of hackers – the passion, the can-do, collective sharing" (p. 18). He further notes that "teachers could create a common pool of resources to which innovators contribute and on which any school or teacher might draw to improve professional practice" (p. 18). For her part, Kim (2000) argues that

> open source software communities are one of the most successful – and least understood – examples of high performance collaboration and community-building on the Internet today. Other types of communities could benefit enormously from understanding how open source communities work. (p. 1)

These two authors speak to the importance of collective sharing and to how collaboration can contribute to teaching and learning communities.

In examining collaboration through an institutional lens, Thomas Friedman (2005), *New York Times* columnist, proposes open source culture and the artifacts created in open communities act as *flatteners* because the means of knowledge production becomes more globally distributed. According to Friedman,

Open-source is an important flattener because it makes available for free many tools, from software to encyclopedias, that millions of people around the world would have to buy in order to use, and because open-source network associations – with their open borders and come-one-come-all approach – can challenge hierarchical structures with a horizontal model of innovation that is clearly working in a growing number of areas. (pp. 102-103)

In a similar vein to Friedman's (2005) "the world is flat" argument, others have also debated the presence of inbuilt beliefs and values revealed, consciously or unconsciously, by the choices made in the adoption of specific technologies. In other words, adopted technologies may reveal deeper value and belief systems than previously understood. For example, Hannemyr's (1999) study of hacker culture[1] reveals that "Software constructed by hackers seem to favor such properties as flexibility, tailorability, modularity and openendedness to facilitate on-going experimentation. Software originating in the mainstream is characterized by the promise of control, completeness and immutability."

A second example comes from Bollier (1999) who argues

The power of the new software movement stems from the "gift culture" that lies at the heart of the open code development model…. People are willing to enter into gift economies because they trust that they will someday share in the "wealth" that the community freely passes among itself – much as the academic community freely shares its knowledge among its members and disdains those who seek to financially profit from the community's shared body of knowledge.

The findings of these two studies illustrate the underlying belief system inherent to open source communities. Open (source) communities are knowledge-sharing communities (Couros, 2006). Understanding open communities and the beliefs, values and practices of their members will assist in the study of a potential collaborative, digital community.

*Connectivism*

*Connectivism* is an emerging learning theory that describes learning as it occurs via networked, digital environments. As this learning theory is dependent upon resource-rich networked learning communities, it is relevant to this study. In positioning Connectivism as a learning theory, it is important to clarify its assumptions on learning. Siemens (2004) writes,

Learning is a process that occurs within nebulous environments of shifting core elements – not entirely under the control of the individual. Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a

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[1] Hannemyr's (1999) observations speak to the complexity of *hacker culture*, a term used to describe intelligent computer programmers whose work originated in the labs of MIT and Stanford University (not to be confused with the more derogatory sense of *hacking* as a mischievous or criminal act).

database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing.

In other words, Siemens (2004) asserts that what is known ("know-what" knowledge is less important than the ability to attain specific knowledge ("know-how" knowledge).

Siemens (2004) identifies the following principles of connectivism:
- learning and knowledge rest in diversity of opinions.
- learning is a process of connecting specialized nodes or information sources.
- learning may reside in nonhuman appliances.
- capacity to know more is more critical than what is currently known.
- nurturing and maintaining connections is needed to facilitate continual learning.
- ability to see connections between fields, ideas, and concepts is a core skill.
- currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

In considering a shared virtual resource centre, it may be important to consider these above principles as they partially characterize learning as it occurs in online education programs. Connectivism may help to address "the challenges that many corporations face in knowledge management activities" (Siemens, 2004). First Nations online learning institutions are rich with knowledge and many have already benefited from informal knowledge-sharing partnerships. Connectivism provides a theoretical framework which helps us better understand reasons for exploring possible models of a First Nations virtual resource centre/LOR.


**Possibilities and Limitations of a Learning Object Repository (LOR) Model**

As described previously in this report, a Learning Object Repository (LOR) is "an online locus for collecting and preserving -- in digital form -- the intellectual output of an institution" (Wikipedia, 2006c). In other words, it is a type of online, free-access library (databank) in which are shelved (stored) a variety of online, learning resources. These resources are varied in size and scope, and may range from a single photo, diagram or music file, to a lesson plan or presentation, to a unit of study or course plan. Presently, LORs are most commonly used at the postsecondary level and are increasing in popularity in the secondary school environment. In the remainder of this section we identify five prominent LORs and highlight some of their positive features. In so doing, we inventory characteristics that may contribute to a successful LOR model.

1. **Connexions (Rice University)**
   http://cnx.rice.edu/

   *Description*

   > Connexions is an environment for collaboratively developing, freely
   > sharing, and rapidly publishing scholarly content on the Web. Our Content
   > Commons contains educational materials for everyone — from children to
   > college students to professionals – organized in small modules that are
   > easily connected into larger courses. All content is free to use and reuse
   > under the Creative Commons "attribution" license. (Rice University,
   > 2005).

   *Innovative features*

   - browse by popularity or keyword
   - possible to browse keyword by alphabetical subcategory rather than unlimited
     field entry – easy to see the breadth of materials available if one is "just
     browsing"
   - highlights "popular content" (most visited objects).

   *Potential limitations*

   - They claim to be "for everyone" but have a login system and password.
   - Searches by instructor and course seem institution specific.

2. **Learn-Alberta**
   http://www.learnalberta.ca/

   *Description*

   > LearnAlberta.ca supports lifelong learning by providing quality online
   > resources to the Kindergarten to Grade 12 (K-12) community in Alberta.
   > Students, teachers, and parents can use the site to find multimedia learning
   > resources that are correlated to the Alberta programs of study.
   > LearnAlberta.ca provides a reliable and innovative repository of resources
   > developed by Alberta Education in consultation with stakeholders; it is
   > available for users at any time on the Internet. (Alberta Education, 2003)

   *Innovative features*

   - resources divided by grade level.
   - interface available in English or French; includes English and French learning
     resources.
   - each freely accessible learning object includes the following links:
     - copyright information, explaining how and under what conditions the object
       may be used

- o acknowledgements, which provides information on the author or development team
- o teacher support materials, which identify primary learning outcomes (relative to Alberta provincial curricula) and technical and/or pedagogical information for teachers on how to use the resource
- o feedback, an online form which allows users to send feedback or ask a question.
- a link to material that is specifically targeted to parents.
- visitors can log in as a guest to access unlicensed materials.

*Potential limitations*

- Some resources are only accessible to members. The LOR includes some licensed resources which are only available to authorized users within the K-12 Alberta learning community. This may also be seen as an innovative feature as this LOR successfully blends open and proprietary content.
- Not all subject areas are available for every grade level.

3. **LoLa Exchange**
   http://www.lolaexchange.org

*Description*

"LoLa is an exchange for facilitating the sharing of high-quality learning objects. It contains materials for use across the curriculum, with a particular focus on modules for Information Literacy" (Wesleyan University, 2004).

*Innovative features*

- introductory video – LoLa's successful introductory video highlights the importance of a visual display that explains what the LOR is and how it works.

- emphasizes rapid development and adaptation (LoLa encourages a sharing culture whereby users are able to add suggestions or extensions to existing lessons in the LoLa repository).

*Potential limitations*

Many of the learning objects are lesson plans, some of which may contain too much context specific content. "Old English Riddles," for example, links to a Swathmore College webpage that is fully copyrighted. Even if the narrow content is relevant, the user cannot always easily access the learning material.

**4.** **Maricopa Learning Exchange (MLX)**
http://www.mcli.dist.maricopa.edu/mlx

*Description*

The Maricopa Learning Exchange is an institutional repository supported by the Maricopa Community College system of Arizona, one of the largest higher education systems in the world. MLX enables the exchange of learning materials among Maricopa employees and adjunct faculty. MLX has also integrated Creative Commons licensing to help protect rights of original authors while promoting community collaboration of materials.

*Innovative features*

- logistics metaphor:  MLX uses a base unit of a "package" in the development of a logistics metaphor which permeates all aspects of navigating the exchange. "Simply put, the criteria for a package is anything from Maricopa created for or applied to student learning" (MCLI, 2004).

  The logistics metaphor is extended to a "Packing slip" which includes item, contact (including number of packages posted by this person), credits (authors), college(s), discipline(s), summary, details, supplements (other LORs or supporting documentation relevant to the package in question), comments (where users of the package can post their impressions), shareback (a particularly interesting feature which encourages participatory culture), and extra (a miscellaneous catch-all category). Subclassification of the package object includes:  teaching strategies, research and development, learning objects, applied resources, web-based activities, online courses, projects, learning support and subject references.

- includes a tour to help explain the site.

- has a detailed credits section – allows the user to identify the source of posted information.

*Potential limitations*

- use of proprietary software – end-user must have access to specific proprietary software formats of the learning objects themselves.

- MLX is very text dense. A great deal of sequential text reading is required to effectively navigate the exchange, a characteristic which somewhat reduces its user-friendliness and could discourage some less tech-savvy users.

**5.** **MERLOT** (Multimedia Educational Resource for Learning and Online Teaching)
http://www.merlot.org/

*Description*

MERLOT is an open resource designed for both faculty and students of higher education institutions. MERLOT was first developed by the California State University system, but has grown into an international referatory. Materials span many subject areas and include lessons, units, digital collections, simulations, tutorials, case studies and animations.

*Innovative features*

- uses a metaphor to organize the open resource, in this instance,
- includes a "tasting room" area which provides introductory information to potential users as well as an orientation video
- includes a peer-review mechanism to help maintain the quality of submitted resources
- runs a reward program to recognize exemplary online learning resources
- uses a rating system to indicate results of peer-review process (or that the learning object has been posted but has yet to be reviewed)
- performs monthly checks of all links in catalogued material; invalid links are updated or removed.

*Potential limitations*

The MERLOT site includes a peer-review mechanism to help maintain the quality of submitted resources. This characteristic is listed as both a feature and potential limitation. While the peer-review mechanism may contribute to quality, it also restricts the rapid development and dissemination of content.

*Note.* All five of the LORs reviewed above have free access and membership. In some cases, institutional restrictions are placed on content.

As illustrated by the examples above, LORs come in a wide variety of formats, each of varying vintages. As we have previously observed (Couros & Brogden, 2001), the wine metaphor is well suited to distance learning environments.

> In her reflections, Collis (1997) uses the following wine metaphor to illustrate pitfalls associated with tele-learning:
> - not every batch of new wine will mature into a great vintage
> - not all forms of new wine will be valued over time
> - some variants of new wine will achieve no more than local consumption
> - some variants of new wine will not last long enough to even ferment
> - not everyone wants to drink wine.

> To extend the Collis metaphor, distance learning has been available for a number of decades with varying quality vintages. The virtual campus, however, is new and yet unproven. Not only are several vintages of the virtual campus currently available, there is to date little consistency in quality or form." (p. 5)

Interestingly, MERLOT adopted the wine metaphor as organizer for the entire repository, speaking to the ongoing, if logistically difficult to address, concerns about quality. As was the case 5 years ago for the virtual campus, LORs are a new, as yet unproven vintage, of the digital age.

Given the inconsistencies presently found in LORs, efforts are being made to identify common, positive characteristics. In one such effort, Leslie (2005) uses *the freesound project* (de Jong, 2005) LOR as his example. He provides an insightful and detailed blog post examining the potential reasons for the success (or failure) of LORs. Examining *Freesound* (a collaborative digital audio database), Leslie observes, "it works; not perfectly maybe, but you can definitely find new samples fairly easily, and it has a number of other social affordances ('users who downloaded this also...' 'and folksonomies') that lead you to related stuff you might like.[2]"

In his analysis, Leslie (2005) proposes the following attributes as characteristic of a successful LOR:
- it works
- it provides new information
- it includes "social affordances" (features that promote social collaboration, for example, linking to other users with similar interests)
- it is dynamic (links to other related information)
- LOR provides the learning community with a solution to a problem.

In addition to the attributes mentioned above, Leslie (2005) is also specific about the technical characteristics of a successful LOR which include:
- efficient search interface
- ease of download functions
-  Creative Commons Licensing
- the format (pdf, ppt, html, etc.) of the learning objects themselves
- the LOR is "concerned with capturing just enough information to allow users to find records that might be what they need, and then an easy way to preview to decide 'yeah' or 'neah,' which seems pretty smart indeed."

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[2] Quotes that do not have page numbers are online quotes, which can be accessed through the Reference citation.

Finally, Leslie (2005) notes "it is useful… to disentangle what works generally from what works specifically in this realm of shareable, remixable content." The feasibility of a LOR can, therefore, be viewed as context specific; the characteristics of successes and failures of other LORs should be considered *along with* other more context-specific factors which will, in interaction, most likely determine the degree of success of any given LOR.

In studying these LORs, we have identified favourable characteristics for implementation. However, because successful LORs must respond to local and institutional needs, any development of a LOR must be specific to its context. As this study is specific to First Nations online learning institutions, it is important to identify perceptions of stakeholders within these institutions.

## RESEARCH METHODOLOGY

### Overview of the Research Process and Theoretical Underpinnings

The Phase 2 Feasibility Study began with a search of the literature from both academic and participatory research cultures. Because of the dynamic, rapidly evolving nature of online learning environments (Downes, 2006; Weinberger, 2005), much of the relevant content was gathered from the participator research culture (weblogs and wikis in particular).

This study was undertaken with a view to gathering information from individuals working within specific cultural contexts. Because of the specificity of both the research environment and the individuals participating in this study, we adopted a qualitative research frame, which "stresses the importance of the subjective experience of individuals in the creation of the social world" (Cohen, Manion & Morrison, 2000, p. 7). Given this qualitative research paradigm, where research endeavours to address the interests and needs of a specific population, we view research validity as "the criteria we use for deciding between alternative interpretations, explanations, and theories of the things we study" (Maxwell, 2004, p. 37). Consequently, we recognize the value of the participants' abilities to provide informed insights of their social world as well as their ability to inform the development of a shared social project.

In conjunction with the literature review, two versions of an online survey were designed, one for school administrators (see Appendix A) and one for instructional staff (see Appendix B). The surveys were disseminated electronically to four First Nations sites. Responses to the survey were submitted electronically via an online web form. The surveys were designed to gather additional information in the following categories:
- descriptions of learners
- descriptions of online programs and/or services
- learning tools used in online environments (identification, benefits, drawbacks)
- comments on interinstitutional collaboration (actual, possible, perceived benefits)
- criteria for success of online programming
- perceived areas for improvement.

Eleven responses to the online survey were received, including participation from all four of the target sites. Following receipt of responses to the online survey, a preliminary analysis of the data was performed, and participants who had previously expressed a willingness to participate in a follow-up interview, as well as participants identified as critical cases, were contacted for the interview phase of data collection. One-on-one interviews were subsequently conducted with four participants from First Nations online learning communities who were identified through the surveys themselves and through a reference system similar to a snowball sample as described in the following paragraph.

> In snowball sampling, researchers identify a small number of individuals who have the characteristics in which they are interested. These people are then used as informants to identify, or put the researchers in touch with, others who qualify for inclusion. (Cohen, Manion, & Morrison, 2000, p. 104)

Snowball sampling was adopted in this study because of the critical case nature of the participants. As Patton (1980, in Cohen, Manion & Morrison, 2000) observes, critical case sampling "is done in order to permit maximum applicability to others – if the information holds true for critical cases (e.g. cases where all of the factors sought are present), then it is likely to hold true for others" (p. 144).

Selected participants were interviewed using an informal, conversational format (Cohen, Manion & Morrison, 2000). In describing the interrelational nature of the interview as research method, Kvale (1996) maintains "the qualitative research interview is a construction site of knowledge. An interview is literally an inter-view, an interchange of views between two persons conversing about a theme of mutual interest" (p. 101). A small number of questions were, therefore, generated prior to the interviews (see Appendix C) to serve as starting points, and further questions were posed, based on the interactions between interviewer and participants. While anonymity was not guaranteed within the parameters of the study, all respondents were assigned a research code to protect their identity in the report.

**Analysis of the Data**

Based on the data[3] collected through the online surveys of administrators and instructors, as well as information garnered during the interview phase, we identified the following themes:

1.    Participants expressed a willingness to collaborate and share among individuals and institutions.

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[3] Data are coded as follows:  (a) <u>Interview participants</u> were each assigned a number (e.g., I#). Data excerpts are coded with participant designation and transcript time stamp and (b) <u>Survey participants</u> were assigned a number (S#). Data excerpts are coded with participant designation and the number of the question to which the response was given.

*I think we could share quite readily across provinces. To be able to institute something like this, even a server with open access, that is the challenge for all of us. We are all developing courses, and developing lessons across disciplines, and so we are very willing to share[4]. (I1; 0:03)*

*There is a willingness to share resources, especially in First Nations communities. (I2; 4:06)*

*There is a general will to collaborate on resources that reflect language, culture and lifestyle. (I2; 4:56)*

*I believe with more collaboration will come improvement in curriculum and delivery mechanisms. Using ICTs to fully deliver a high school program is a relatively new challenge and will need time to develop to its potential. Working with those having a vested interest will move us in the right direction. (S7; Q7)*

2.   Collaboration and sharing is already happening informally among individuals, schools and organizations (between both First Nations and non-First Nations institutions and communities).

*We've been talking to [another] school division… and we actually made a connection with them. They came up here and visited us, and they have a partnership which is very similar to what we are doing. They work with [a] community college and we work with other similar partnerships. We have lots of similarities .... we're using Moodle, they're using Moodle; they're allowing us to use their Breeze license right now. (I2; 17:02)*

*I think there is a lot of potential for that (collaboration). We are already reciprocating with the ability to offer classes back and forth between Tisdale and here. That's evolving as it should as it's based on the needs within the communities we work in, rather than building something huge, a huge white elephant. (I2; 20:19)*

*The collaboration [of Grassroots] was tailor-made for the type of emerging network that we had. Same thing with the Network of Innovative Schools. There is still connection between [two of the schools]. You can find kindred spirits that way. (I3; 9:13)*

*The Internet has already transformed the way we share resources in the classroom and between and among teachers and schools. There's a new feeling of sharing that's come from this, and I think it's time we did our best to take advantage of it. (I4; 5:07)*

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[4] Italicized quotes are participant quotes.

> *For Math we use [an online] textbook… written by a Math teacher from [another city]. In Chemistry and Biology the Sask Learning Central iSchool is a springboard for content and lesson ideas. Most of our material is a variety of online sources. (S9; Q9)*

3. There is a general preference among those interviewed toward free and open source resources.

> *We found that we needed something more universal, so someone found Moodle, started playing with it, started using it ... then we modified the latest version of Moodle to fit specifically our program. So now we have a team that works with something we call First Nations Moodle or Moodle FN. This was developed so it probably fits First Nations schools a bit better than the general Moodle environment. And we have made this available to anyone who wants it. (I1; 11:49)*

> *I prefer to use open source and free tools for the simple fact that students can use these same tools at home. This alone seriously levels the playing field when it comes to having access to resources. (I4; 7:09)*

On barriers to collaboration:

> *There wasn't an ability to share across platforms [with another institution], and therefore, there wasn't the ability to reciprocate…There is certainly the willingness on our behalf on sharing and the development of resources with [others]... as long as [the resources] are in a format where they can be shared. Then, there could be some mutual benefit. (I2: 22:18)*

4. Although participants expressed a preference for free and open source resources, in practice, all the participants' institutions use a mix of both proprietary and open source tools.

> *We're using Elluminate as a tutorial tool now, as a synchronous tool, and at this point, with the students that we work with, a completely synchronous application doesn't make any sense. But having smaller group sessions and with individuals, this works really well. We think that Breeze will work really well with that ... at least as well as Elluminate. (I2; 18:05)*

> *We use WebCT, Elluminate as the instructional tools along with Microsoft Office as the student production tools. Email, chat and threaded discussions are handled through WebCT. (S3; Q4)*

> *We use a platform called Moodle, email, video conferencing, student discussion forums, web pages for storing images and video, as well as a range of hardware to meet students [sic] needs such as digital camera, video cameras, scanners, printers, projectors. (S7; Q4)*

5.  In regards to a shared, online resource, participants expressed a need for some form of vetting or referee process of content, while acknowledging this process can hinder rapid sharing and adaptability.

    *Anyone should be able to take out of the repository, but you can't just put back in without the review process. You can't put something back in that's modified unless someone has reviewed it. (I1; 25:24)*

    *I think that more of a problem is who vets what material goes up there. (I3: 33:51)*

    *In one sense, I'd feel more comfortable if the resources were thoroughly reviewed because I want to know that I am not wasting time looking through resources that just aren't that good. However, sometimes what I may think is a really poor resource, may be beneficial to someone else, and vice versa. It'd be nice to have access to all of the resources, but to have the best resources sort to the top somehow.  (I4; 11:17)*

    *A huge issue is 'chain of command.' Who do I answer to? Who evaluates whom? (S9; Q8)*

6.  The participants' institutions are already actively involved in digital video production and believe multimedia is an important component of a shared, online resource repository.

    On creating reusable lessons/video:  *We actually created a PD series on distance learning, and so we are encouraging teachers within the region to try it out. We do one live session each month, then we create a list of resources surrounding the topic (I2; 29:06).*

    *We had people sending in their [multimedia] submissions, and we would place them on the Internet and have people vote on them, and then give the authors credit. It was a neat way of getting people to use the system, and it also created a bridge that had never before existed between the school and home. "You know, look Auntie what I did." And, then in turn would show people in their own homes. So early on, we developed a history of being producers as well as consumers. (I3; 14:18)*

    *A teacher in [another city] is doing online instruction, but not 'live.' He has set up a few Elluminate tutorials to help teach students. His tutorials would be very beneficial for my students. In the future I can see teachers in one location being able to teach students in other communities, and countries. (S9; Q7)*

7.   Aboriginal content must be an essential component of a shared, online resource repository.

> *A good example in LaRonge is the Curriculum Resource Unit and a project they have been working on called 'The Gift of Language' which is a repository of resources that promotes the use of Cree language. They've been working on it for the last year and a half. (I2; 4:06)*
>
> *If you have the capacity and interest of people producing content, whether it be digital video or sound recordings ... for example, we have an aboriginal language session on our webpage, so every Christmas we have more and more people at the Christmas concerts who are singing Mi'kmaq songs if they hadn't been on the webpage, if these songs hadn't been pressed onto a CD, if it hadn't been distributed. (I3; 21:09)*
>
> *There are already many resources online that I use, and so if another resource is developed, I have to have a reason to use it. There has to be a compelling reason. If we can really focus on aboriginal content, and give people something like this, that they can't get anywhere else, there's your reason for existence. There's your niche. And that niche will continue to be of importance as we see the rise of aboriginal online education. (I4; 21: 34)*
>
> *INAC needs to realize that programs developed by aboriginal organizations for aboriginal students will ultimately meet the communities [sic] needs if resourced properly. (S7; Q7)*

## RECOMMENDATIONS

Based on the review of relevant literature and the responses gathered during data collection, we recommend that a collaborative, open learning object repository be considered for First Nations online education in Canada. To that end, in what follows we outline design considerations (both pedagogical and technical) relevant to the establishment of such an entity. In addition, we identify some potential limitations of the proposed model to guide the decision-making process.

**Design Considerations**

Given that successful LORs nurture a culture of sharing and that institutional support affects the development of the LOR, congruence must exist between the institutional philosophy and the aims of the LOR. We propose the following characteristics be considered in the design and implementation of a First Nations open LOR.

1.  **Visual presence and branding**

    a.  The LORs interface should be aesthetically pleasing.

    b.  It is important to provide documentation explaining what the LOR is and how it works. LoLa's introductory video, "LoLa explained," provides an exemplar for how this can be achieved using multimedia: http://www.lolaexchange.org

    c.  Care should be undertaken to design a distinct logo, colours, etc. so that the First Nations open LOR can be easily recognizable with its own distinct identity. The MLX crossroads logo is exemplary in this respect: http://www.mcli.dist.maricopa.edu

2.  **Intuitive design**

    a.  The members of the LOR will have various levels of proficiency in technology. Ease of use (use of text, buttons, navigation, uploading, downloading) is, therefore, paramount. Thorough usability testing is recommended.

    b.  Learning objects should be accessible via multiple search options. Possible indexes include:  keyword, themes, author, subjects, courses, popularity.

3.  **Organizational structure**

    a.  The LOR must be adaptable to meet the varied needs of stakeholders and their community membership.

    b.  The LOR must be scalable to accommodate new and emerging technologies.

    c.  The LOR should have a coherent design such as the metaphor systems used by MLX (logistics) and MERLOT (wine).

4.  **Social affordances**

    a.  The LOR should place importance on leveraging informal networks such as:
        o   friend of a friend (FOAF) networks
        o   reputation or rating system (such as the eBay reputation system)
        o   personal spaces (blogs)
        o   collaboratively developed spaces (wikis).

    b.  LOR members should be able to adapt the LOR environment to reflect their personal preferences (e.g., bookmarking favourite objects, connecting to members with similar interests).

c.  The LOR content should be subscribeable (via RSS) to allow users to track various events (e.g., popular objects, recently posted objects or specific tags).

d.  A peer review network should be encouraged by which members, or a designated group of members, rate submitted content.  [***Note.***  Peer review systems are often cumbersome and work against many of the other desirable characteristics of a LOR. See limitations section for further discussion.]

e.  A LOR should not be seen as a production-line model for static educational objects. Rather, the LOR experience should be dynamic, interactive and build strong educational relationships among members. As purported by MIT (Goldberg, 2001), the value of online learning communities lies not in static objects but in the relationships forged between and among those who engage as active participants of learning communities.  As participants in this study have already stated, First Nations communities have moved into 'multimedia' on-line resources and 'live' instruction, while seeing the benefits of opportunities for collaboration and sharing.

5.  **Open licensing and formats**

a.  Tremendous strides have been made in recent years in the development of free and open source software (FOSS). Because of cost implications, adaptability and widely available resources which can support the development of a LOR, FOSS should be considered a viable option for technical development.

b.  Content (learning objects) in the LOR should be posted in suitable, open formats which can be viewed using freely available interfaces. This is an important, recent event which allows for better communication and sharing of documents across organizations, governments, etc. (For examples of recent migration to Open Document formats see the state of Massachusetts <http://tinyurl.com/j2tth> and the Government of Norway <http://tinyurl.com/khazv>).

6.  **Economics**

a.  The "membership model" (Downes, 2006), or consortium model, is the model we identify as "best fit" for the funding structure of a FN LOR. In this model, "a coalition of interested organizations is invited to contribute a certain sum, either as seed only or as an annual contribution or subscription; this fund generates operating revenues."  A coalition of First Nations schools providing online programming could, in partnership with governance-oriented funding agencies (Government of Canada, Tribal Councils, Ministries of Education, RMOs), generate the funding necessary for the development of a sustainable FN LOR.

b.  The FN open LOR need not stand alone. Using the referatory model, it will be able to connect to other LORs and their associated resources. As Friesen (2006) reminds us, "to realize resource sharing and cost savings that are promised by learning objects, it is important also to connect these collections or repositories using common protocols."

c.  A FN LOR may be ideal for the distributed learning populations of many First Nations communities. Often, smaller, remote communities do not have the critical mass necessary to leverage resources sufficient to respond to learner needs. A collaborative FN LOR has the potential to benefit distributed populations in ways more common to individuals living in larger (often urban) learning communities. Many First Nations communities, including those involved in this study, are served by existing First Nations online learning institutions. A FN LOR could be viewed as an enabler for current online programs, providing content enrichment and networking opportunities between and among learning communities.

7.  **Content**

a.  As was evident in the data analysis, culturally specific content will be a defining characteristic of the FN open LOR because such content is not readily available in other LORs.  A FN LOR should house unique First Nations content. Furthermore, the FN open LOR should provide the necessary tools for members to collaboratively develop and share First Nations content, a benefit to a distributed population and dispersed communities.

b.  A referatory model can be used to access culturally nonspecific content already available in various LORs (e.g., LearnAlberta.ca).

c.  Many stakeholders are already actively developing rich multimedia and other learning objects. It will be important to capitalize on existing projects and encourage their continuing development through various First Nations online learning institutions (e.g., KIHS, Masahikana, Sunchild, Credenda, First Nations SchoolNet, RMOs).  The pedagogical processes and implications involved in such development will need discussion.

**Potential Limitations**

It is our recommendation that the design considerations listed above should be adopted without losing sight of the following issues.

1.  Grassroots volunteerism cannot be mandated. The success of a FN open LOR will depend upon principles of volunteerism, sharing and collaboration. Such principles cannot be assumed and need to be nurtured through institutional infrastructure and support.

2. It is impossible to distinguish the product (a generic LOR) from the community it serves. Therefore, it is not only a question of collecting learning objects but it is also of fostering a sense of ownership in the LOR that may make a difference for First Nations communities. It is important to understand the philosophy of sharing of the member institutions, as well as their expectations for reciprocity.

3. Limits of scale can impede the success of any collaboratively developed resource. For example, the MLX, an elaborate, well-subscribed, resource-rich LOR, serves 250,000 students and associated staff and faculty. First Nations communities have both limited staff and limited clientele, factors which lead to limited financial resources. It is important, therefore, to have a coordinated effort which considers community needs in relation to available resources, establishing priorities that will afford the greatest, relevant access to a wide variety of online learning opportunities for First Nations learners.

4. All LORs reviewed in this study had some mechanisms in place to control posting and editing of content. Some mechanisms are more rigourous than others. As the criteria for conformity and standardization increases, the flexibility, adaptability, and currency of content is compromised. A balanced approach to reviewing content is strongly recommended.

5. As currently structured, the Internet provides a platform for learning built on ideals of openly accessible, free content. As the fields of LORs and online learning content continue to evolve, the potential for the commoditization of learning content and delivery increases. We encourage stakeholders involved in the development of a FN open LOR to examine their shared philosophy as it pertains to issues of intellectual property, sponsorship, and shared content.

**Summary Recommendation**

Of the digital era, Weinberger (2005) observes,

> We're linking to one another, disagreeing, amplifying, making fun, extending, sympathizing, laughing. We are talking with one another, thinking out loud across presumptions and continents. If you want to know about an idea, you could go to an encyclopedia and read what an expert says about it. Or you could find a blog that talks about it and start following the web of links. You'll not just see multiple points of view, you'll hear those points of view in conversation. That's new in the world.

This means that connectedness is an integral component of online networks. And this connectedness goes beyond the people using the system to include the objects and processes within the system itself. Zengrstrom's (2005) theory of Object Centred Sociality is useful here. He maintains,

> The fallacy is to think that social networks are just made up of people. They're not; social networks consist of people who are connected by a shared object.

That's why many sociologists, especially activity theorists, actor-network theorists and post-ANT people prefer to talk about 'socio-material networks', or just 'activities' or 'practices' (as I do) instead of social networks.

Resources must match needs. Consequently, social affordances and richness of learning objects and processes are not, in themselves, sufficient attributes for attracting and holding online users. Simply put, one must reverse the Field of Dreams (Gordon, Gordon, Robinson & Kinsella, 1989) adage: "If you build it, they won't necessarily come." A First Nations LOR must, therefore, cultivate a distinct identity inclusive of community, language, and cultural considerations which will provide perceivable benefits to community members while responding to their pedagogical interests and technological capabilities.

## AREAS FOR FURTHER RESEARCH

In this report we have summarized the findings of research undertaken to better understand the needs and perceived benefits associated with the development of a collaborative, open online educational environment for First Nations communities, culminating in our recommendation for establishment of a FN open LOR. As this is a complex undertaking, we identify the following three areas which require further investigation.

The details necessary to establish a cohesive, vetting process go beyond the scope of the current study. Models identified within the context of this study feature vetting systems that are loosely designed and, consequently, do not provide sufficient detail. Furthermore, due to curricular requirements placed on K-12 systems by provincial and local governance structures, these systems may require more detailed, rigourous vetting protocols. Any pursuit of a vetting system would require further study in view of local context requirements.

Also beyond the scope of the current study are issues related to the technical infrastructure required for the implementation, development, and sustainability of a FN LOR. Any decisions made regarding the technical infrastructure should be informed by the specific needs of member institutions, financial constraints, and currently available technological innovations. Because none of this information is known to us at this time, we feel it unwise to speculate on this subject. However, we feel a critical and detailed understanding of technical infrastructure will be essential to any further development of a FN LOR, as well as remaining open to future technological innovations.

Most existing LORs are culturally nonspecific. Participants expressed some ideas regarding the ways in which a FN open LOR might take into account First Nations content and processes. As a LOR specific to a cultural group is a unique undertaking, we recommend careful documentation and research be incorporated into the design and implementation stages of a FN open LOR to ensure the inclusion of culturally relevant content and processes, as well as their pedagogical implications.

At present, several independent, often loosely connected stakeholders are working, sometimes independently and sometimes through informal partnerships to provide a variety of online learning opportunities in First Nations communities. A FN open LOR may provide a model for collaboration and sharing of content and processes across autonomous institutions. We recommend that the proposed model include ongoing research to identify how collaboration and sharing of content across FN online education occur and how individual teachers, students and other community members are served.

## CONCLUSION

As the *Aboriginal Voice Final Report* (Crossing Boundaries National Council, 2005) reminds us, "integrating services in ways that better meet the needs of citizens requires the sharing and integration of information across program, departmental and jurisdictional boundaries" (p. 26). Furthermore, the report emphasizes the importance of technological infrastructure in ensuring long-term economic success for First Nations communities: "the incorporation of ICT into economic development strategies can produce, particularly over the longer term, new and expanded business opportunities, more and higher paying jobs and a more efficient infrastructure" (p. 21). Based on the results of the present study, we propose the establishment of a First Nations open learning object repository with a mandate for collaborative knowledge sharing within and between First Nations communities as a timely, feasible way to respond to this call.

In addition to the long-term contributions of online collaboration, a First Nations LOR will provide a systematic way to begin broad dissemination of information within First Nations online educational communities. Because of the generative possibilities of LORs, a First Nations virtual space which is context and content specific also holds the potential to facilitate community building and knowledge generation. As summarized by one of the interview participants:

> *Having the ability to connect and to know who's doing what in Miramichi and who's doing what way up in Northern Quebec ... and having a phone number, and being able to talk that person. And, especially when we are talking about First Nations ... being able to share ideas and information ... and even if it's video online about communities and what it's like to live "way over there" and "this is my belief system" and "this is my language" and "this is what my community is about" ... that whole sense of identity across the country. I think this could be a unifying thing, and it something that would really help to build a real community ... especially for First Nations across the country. (I2; 41:18)*

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**APPENDICES**

**APPENDIX A**

**Questions Included in Online Survey – Administrators**

# Questions Included in Online Survey – Administrators

1. What is the name of your institution?

2. Describe your learners.

3. Please provide a brief description of your institution's online programs and/or services.

4. a. What learning tools do you use in your online environments (e.g., WebCT, Blackboard, Elluminate, video-conferencing, weblogs, HTML course pages, email, etc.)?

   b. What are some of the benefits and drawbacks in using the tools you identified above in your particular learning environment?

5. Do you currently collaborate with other institutions in the delivery of your online programming? If so, please identify your partners and describe your collaborative activities.

6. a. How might further partnerships in online learning initiatives benefit your institution?

   b. Please describe possible roadblocks to achieving and/or maintaining such partnerships.

7. How do you measure the success of your online programming?

8. Please identify possible areas of improvement for your online programs and/or services.

**APPENDIX B**

**Questions Included in Online Survey – Instructional Staff**

## Questions Included in Online Survey – Instructional Staff

1. What is the name of your institution?

2. Describe your learners.

3. Please provide a brief description of your institution's online programs and/or services.

4. a. What learning tools do you use in your online instructional activities (e.g., WebCT, Blackboard, Elluminate, video-conferencing, weblogs, HTML course pages, email, etc.)?

   b. What are some of the benefits and drawbacks in using the tools you identified above in your particular teaching context?

5. Do you currently collaborate with other institutions in the delivery of your online programming? If so, please identify your partners (from both within and outside your own institution as the case may be) and describe your collaborative activities.

6. a. How might further partnerships in online learning initiatives benefit your particular instructional activities?

   b. Please describe possible roadblocks to achieving and/or maintaing such partnerships.

7. a. What sources do you use for the majority of the content utilized in your courses (e.g., self-developed, textbooks, online sources)?

   b. Do you access shared content from any particular Internet sources of note? If so, could you tell us some of the major sources?

   c. Do you make your content available online for others?

8. How do you measure the success of your online instructional activities?

9. Please identify possible areas of improvement for your online instructional activities.

**APPENDIX C**

**Preliminary Questions for Open-Ended Interviews**

**Preliminary Questions for Open-Ended Interviews**

1.  How would you describe your institution's attitude toward sharing intellectual property?

2.  We have researched LORs as environments which support a culture of sharing. To what extent do you feel your institution's philosophical approach to learning and readiness fits with the sharing model of LORs?