

Minding the Capacity Gap: eLearning on Canada Lands

, Canada

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SUMMARY

This paper addresses the question, ‘What is the potential for delivery of boundary law training focused on Canada Lands by e-Learning methods, to government, the surveying profession, and to First Nations?’ The rationale for participation of each potential learner group is explored. The e-Learning approach to teaching boundary law principles as a continuing professional development resource is supported by, and is anticipated to deliver benefits to, all three learner groups. Further development of a pilot project in modular form is proposed, based on partnerships between the Canada Centre for Cadastral Management (CCCM), the Association of Canada Lands Surveyors (ACLS) and the National Aboriginal Lands Managers Association (NALMA).

Motivation

This is a conceptual design for an e-Learning module, the inspiration for which came, in part, from Garvin’s (1993) model of a “learning organization” as characterized by: (1) Systematic problem-solving; (2) Experimentation with new approaches; (3) Learning from the organization’s own experience and past history; (4) Learning from the experiences and best practices of others; and (5) Transferring knowledge throughout the organization.

As a basis for corporate skill upgrading and maintenance, the CCCM recognizes the need to capture existing corporate knowledge; to transfer knowledge internally; to produce an adaptable workforce; and, ultimately, to match the skills of individuals with organizational objectives. As a gauge of the ultimate effectiveness of this initiative, seven factors of successful staff development initiatives in land administration institutions have been identified. An effective training system:

- Improves skill base of management;
- Increases efficiency of the organization and its service orientation;
- Increases overall land management effectiveness;
- Facilitates expansion or adaptation of organization’s mandate;
- Enhances ability of the organization to function in information economy;
- Provides opportunities for life-long learning; and
- Encourages continuous training. (after Markus, 2002)

CCCM is experiencing much the same challenges to staff retention and maintaining capacity as the Canadian land surveying industry at large, a condition being combated through a renewed focus across its parent Department of Natural Resources (NRCan) on developing in-house competencies through individual learning plans. E-Learning is seen as a possible

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means of delivering desired capacity to the organization in this shifting environment while developing and retaining the skills of much-needed career-oriented individuals.

Within the overall Canadian surveying industry, demand is buoyant and, thus, land surveying is in a relatively healthy state, employing an estimated 11,000 people, approximately 2,800 of whom are licensed land surveyors (2002 figures). An industry of this scale requires 125 new articling students every year, yet this is double the actual number entering articles annually. (CCLS, 2007) The effect of this shortage of new entrants is compounded by the retirement of the “baby-boomer” cohort; for example, while the number of land surveyors in the province of British Columbia has been steady at about 300 for the past 15 years, it is estimated that there will be only 190 by 2020. (Budgen, 2007) Industry is thus justifiably concerned about its capacity to adequately provide services to the public.

In 2001, Aboriginal people accounted for 2.5% of Canada’s labour force. (Luffman & Sussman, 2007) There are no published figures on the participation of Aboriginal peoples in land surveying; however, anecdotal evidence suggests that the number of licensed Aboriginal land surveyors is well below the expected level of 75, based on a national strength of 3,000. The rate of unemployment of Aboriginal peoples living on Indian Reserves is about 25%, compared to about 15.4% for Aboriginals living off-reserve, and 6.5% for non-Aboriginal peoples. (Luffman & Sussman, 2007)

Promoting the surveying profession in general, and that of Canada Lands Surveyor in particular, to Aboriginal youth is a mission of the ACLS Aboriginal Liaison Committee (ALC), as acknowledged in the committee’s terms of reference. (ALC, 2004) Means to effect this include representation by CLS regional groups at career fairs for Aboriginal youth in the north; contact with Aboriginal guidance counsellors; alliance with the ACLS Education Committee to distribute “Surveyor in a Crate,” a comprehensive set of curriculum-g geared activities that stress essential competencies of land surveying, to teachers; and the popularization of geo-caching among students via a GPS receiver loan program. The committee’s primary motivations include identifying land surveying as a career integrated with the land, thus potentially assisting in developing land management capacity within First Nations communities. Recognizing the disproportionate rate of social and economic challenges faced in remote communities, a secondary objective is to introduce students to the wide range of employment opportunities in land administration, geomatics, and mapping sciences in general.

Through the discussions of the ALC over the past year, it became apparent that the three potential learner communities could benefit from common learning resources. The common concern over capacity affecting CCCM, ACLS and First Nations has been acknowledged in discussions of the ALC, and with NALMA. (ALC, 2008; Irons, 2008) The e-Learning concept is being explored as a means of increasing land surveying knowledge to:

- (i) ensure competency of boundary management specialists within government;
- (ii) maintain competency of professional land surveyors on Canada Lands; and to
- (iii) maintain and expand competency of Aboriginal Lands Managers.

Potential Learners within government

CCCM is the primary land surveying agency within the federal government, composed of some 110 staff across ten regional offices. As such, its responsibilities include the management of boundaries and boundary systems to reference interests on Canada Lands, which includes lands held in trust for the public at large (e.g. National Parks, Historic Sites), or for specific groups such as Indian Bands (also referred to as First Nations), lands in the three northern territories, the offshore, and certain classes of lands created pursuant to land claims agreements.

CCCM has invested much over the past several years in its migration to an e–environment for cadastral management on Canada Lands. Information and communications technology (ICT) was indispensable in facilitating the required standardization of processes across the regions – for example, through regular use of teleconferences augmented by Microsoft NetMeeting to demonstrate technical processes connected to cadastral management, geographic information systems, project management, etc. Traditional face–to–face training methods, though costly, are also used. All offices are either equipped for videoconferencing or located in buildings offering such facilities. The need for close cooperation across regions has produced an appreciation for the capabilities of ICT as a medium for knowledge transfer and, thus, a potential learner community sensitized to the efficacy of online methods. Among the main demands on the organization is the need to further rationalize its processes along its three business lines: boundary management, cadastral management, and client liaison and program management. Key to this process is articulating the linkages between business lines, the specific slate of skills that comprise each position, and the competency vector identified in the individual learning plans.

Potential Learners within the Canadian surveying industry

The second potential learner group, the Association of Canada Lands Surveyors (ACLS), has 560 members across Canada. E–Learning is seen as a means of supplying continuing professional development (CPD) nationally. The association is in the process of identifying and securing the necessary infrastructure to support online CPD delivery. By avoiding the need for costly face–to–face training sessions, involvement in CPD, which is as yet voluntary, is anticipated to increase. ACLS’s intention is to ultimately make online training available to all 3,000 surveyors in Canada through agreements with the ten provincial surveying associations. (Tétreault, 2008) In addition to CPD for current members, e–Learning is viewed as a tool that would assist the preparation of candidates for a CLS commission, of which there are 103 at present. The majority of candidates take an average of three years to pass the three ACLS–administered exams. The current focus of e–Learning course development is surveying in the offshore.

Potential Learners within First Nations

There were some 976,000 Canadians who identified themselves as Aboriginal people in 2001. (INAC, 2007) There are roughly 600 First Nations who hold interests to some 2,900 Indian Reserves. Land claim agreements in northern and western Canada and the devolution of government mandates over Aboriginal lands are expanding the authority of Aboriginal peoples, with attendant demands in land management capacity (e.g., management of land transactions within an Indian Reserve). Increasing the level of economic development and self–sufficiency of First Nations is among the ultimate aims of the *First Nations Land*

Management Act (FNLMA) and the Reserve Lands and Environment Management Program (RLEMP) as alternatives to land management provisions of the *Indian Act*.

Currently, 21 First Nations operate under the First Nations Land Management (FNLM) program, while 25 are in the developmental stage, five have scheduled votes within the next six months on proceeding with FNLM, and 100 are awaiting intake. (Taylor, 2008) A recent unsuccessful proposal to increase participation in the FNLM program to 40 First Nations per year would have seen up to 200 First Nations developing FNLM capacity over the next five years. CCCM's interest in e-Learning is motivated, in part, by investigating means of facilitating the massive growth in capacity that a shift of this scale may ultimately require. The piloting of an e-Learning approach is, thus, a valuable exploration.

Little information is available from Indian and Northern Affairs Canada (INAC) estimating the number of lands managers required to implement RLEMP and FNLM or their spatial distribution across Canada. Of relevance to the e-Learning initiative, a draft set of "Land Management Competencies" does acknowledge "the ability to interpret survey plans and surveyor field work information" and knowledge of "survey processes" as necessary competencies. (INAC, n.d.1) RLEMP is a co-management form of devolution, wherein lands authority is shared between a First Nation and INAC, for individual land holdings, leasing, permitting, estates and research, as compared to a self-government arrangement outside the *Indian Act*. A draft overview of the RLEMP program proposes that, in addition to technical aspects of land management, "students will also learn how to incorporate traditional knowledge and customs into their day-to-day management of lands." (INAC, n.d.2) Both RLEMP and FNLM require certified Aboriginal Lands Managers.

A Professional Aboriginal Lands Management Certificate can be earned through completion of two levels of training: Level One consists of six degree-level courses offered by the Indigenous Peoples Resource Management Program (IPRMP) at the Indigenous Land Management Institute (ILMI), University of Saskatchewan; Level Two is more technically oriented and consists of six additional training modules offered by NALMA, completion of a 37-hour practicum and a final research paper. (NALMA, 2008) Training includes both face-to-face instruction and distance learning. In 2007, the program's second cohort of 13 Lands Managers received their Aboriginal Lands Manager Certificates, followed by a new intake of 22 students in spring, 2008. The IPRMP/NALMA model has matured over its three-year history, modifying its approach based on student outcomes. Among the challenges needing redress are the sometimes low levels of formal education of incoming students, and the need to produce graduates that can effectively engage community members on complex land management issues such as the Crown's duty to consult with First Nations. (Natcher, 2008) Three-quarters of the student body are funded by INAC and one-quarter are funded directly through their First Nations, the latter form of financing representing an acknowledgement of the priority placed on NALMA certification by communities themselves. (Natcher, 2008.)

NALMA has acknowledged the potential benefits of collaboration with CCCM and the ACLS in an e-Learning approach that addresses commonalities with NALMA's mandate. (Irons, 2008) Aboriginal Lands Managers certified through the IPRMP/NALMA model are required to complete eight hours of relevant NALMA-approved training per year to maintain certification. Incorporating, on a pilot basis, an e-Learning module on boundary law

principles would provide a valuable addition to CPD activities recognized by NALMA. Furthermore, CCCM's experience in dealing with First Nations Lands Management staff at large confirms that there is a desire for information on boundary law principles among First Nations officials. (Ballantyne, 2008a) In any proposed collaboration with First Nations, it is important to ensure that e-Learning is presented as an opportunity for educational enhancement, rather than an obligation; and to ensure that the training opportunity does not inflate the already comprehensive two-year program. (Walker, 2008)

Design of an e-Learning training module on boundary law principles

This e-Learning initiative is intended primarily as a resource for CCCM to strengthen its internal capacity in the boundary management business line. The e-Learning model application produced for this paper is based on course material developed over two decades of traditional face-to-face training of undergraduate students, and both private and public sector land surveyors across Canada. (Ballantyne, 2008b) Attempting to convey boundary principles in the absence of an instructor runs the risk of depriving the student of valuable visual, vocal, and body language cues that may, *in situ*, be conveyed to describe the context and qualify remarks; to say nothing of the instructor's ability to enrich the lesson by discerning learners' receptiveness (or lack thereof) to the material, provoking discussion and responding to questions. It would be difficult to replicate the benefits of a quasi-Socratic classroom experience to students of land surveying, many of whom are often not inclined towards the language arts.

The model produced for this study consists of a 54-point lesson on ambiguity in legal descriptions, organized in four parts: ambiguity, rectilinear boundaries, riparian boundaries, and the role of the expert. Questions are posed, followed by brief answers, about:

- the land surveyor's role in defining, demarcating and interpreting boundaries, and the utility of the hierarchy of evidence in cases of ambiguity;
- when posts planted in the ground may not be legally sanctioned as boundary monuments, and statutory remedies available in the case of boundary encroachments;
- the applicability of riparian rights to watercourses, and whether the *ad medium filum* presumption applies to Indian Reserves in western Canada; and
- the role of a boundary expert at court, and the relation of expertise to commercial interests.

The model, which consists of a series of HTML-coded pages connected by hyperlinks, includes additional links to supporting material, whether from statutes, judgments of the courts, explanatory articles from scholarly or professional journals, audio or video clips from seminar presentations, or line diagrams to illustrate boundary issues. At this conceptual stage, the details and functionality of the technical learning management system is not a central concern of this paper. However, in terms of advancing design of the module, some questions about course delivery remain to be addressed:

- The type of media included in the training course – internet only or internet resources supplemented by text books?
- Will training involve periodic teleconferencing or videoconferencing with the instructor?
- Will online training be supplemented by face-to-face training?

- Will training require participation in moderated discussion forums?
- Will training require collaboration with peers on group projects?
- To what extent will tutorial support be provided?
- Will online help be offered via email, or will subject-specialist mentors be available by telephone?
- Are adequate computer, teleconferencing and videoconferencing facilities and internet access available in remote locations?
- What is the best way to assess student success?
- How does this e-Learning initiative mesh with alternative / concurrent courses?

Summary

To maximize its usefulness, the content of the e-Learning module must be both theoretical and pragmatic. It should focus on complex topics such as boundary uncertainty, but also clearly convey the rules for resolving boundary uncertainty. In designing a cross-functional resource, to allow the material to accommodate a range of curricula, such as in the three learner groups, discrete concepts of boundary law must be extracted, appropriately combined and sequenced for delivery in a virtual environment. The boundary law module is envisaged as part of a suite of courses aimed at developing skills in managing boundaries, based on legal concepts rooted in the common law tradition. In respect of this commonality, a boundary law e-Learning pilot module would be readily applicable to CCCM and ACLS requirements, without modification in either setting.

However, a course offering of this nature that is produced without consultation with First Nations, necessarily presents an institutional perspective on the problems inherent in land management and land survey. To ensure full transferability beyond CCCM and ACLS, and to First Nations learners, content would have to be scrutinized and possibly modified for application to an Indian Reserve setting. Focusing as well on the background and constraints of First Nations learners, the potential for “intercultural miscommunication” must be minimized. (Russell *et al.*, 2007; Alberta, 2005) The value of collaboration towards developing a shared resource on a pilot basis is acknowledged by the three potential learner organizations. Collaboration among CCCM, ACLS and NALMA promises to reduce development costs and to demonstrate cooperation among institutions in an emerging area. In conclusion, the following next steps should be pursued:

1. Quantifying the market analysis. Where are potential learners, and have they adequate ICT resources?
2. Extracting a syllabus of pertinent boundary law competencies for each of the three learner groups, through consultation within CCCM, with NALMA and ACLS;
3. Consulting with stakeholder groups on e-Learning concept and boundary law module design:
 - Association of Canada Lands Surveyors
 - British Columbia Institute of Technology
 - First Nations Alliance for Land Management
 - Indian and Northern Affairs Canada
 - Indigenous Land Management Institute, University of Saskatchewan

- National Aboriginal Lands Managers Association;
- 4. Incorporating stakeholder input to refine and expand the current model into a functioning prototype to reflect the complete range of content in the boundary seminar materials; and
- 5. Beta-testing the prototype within CCCM regional offices.

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