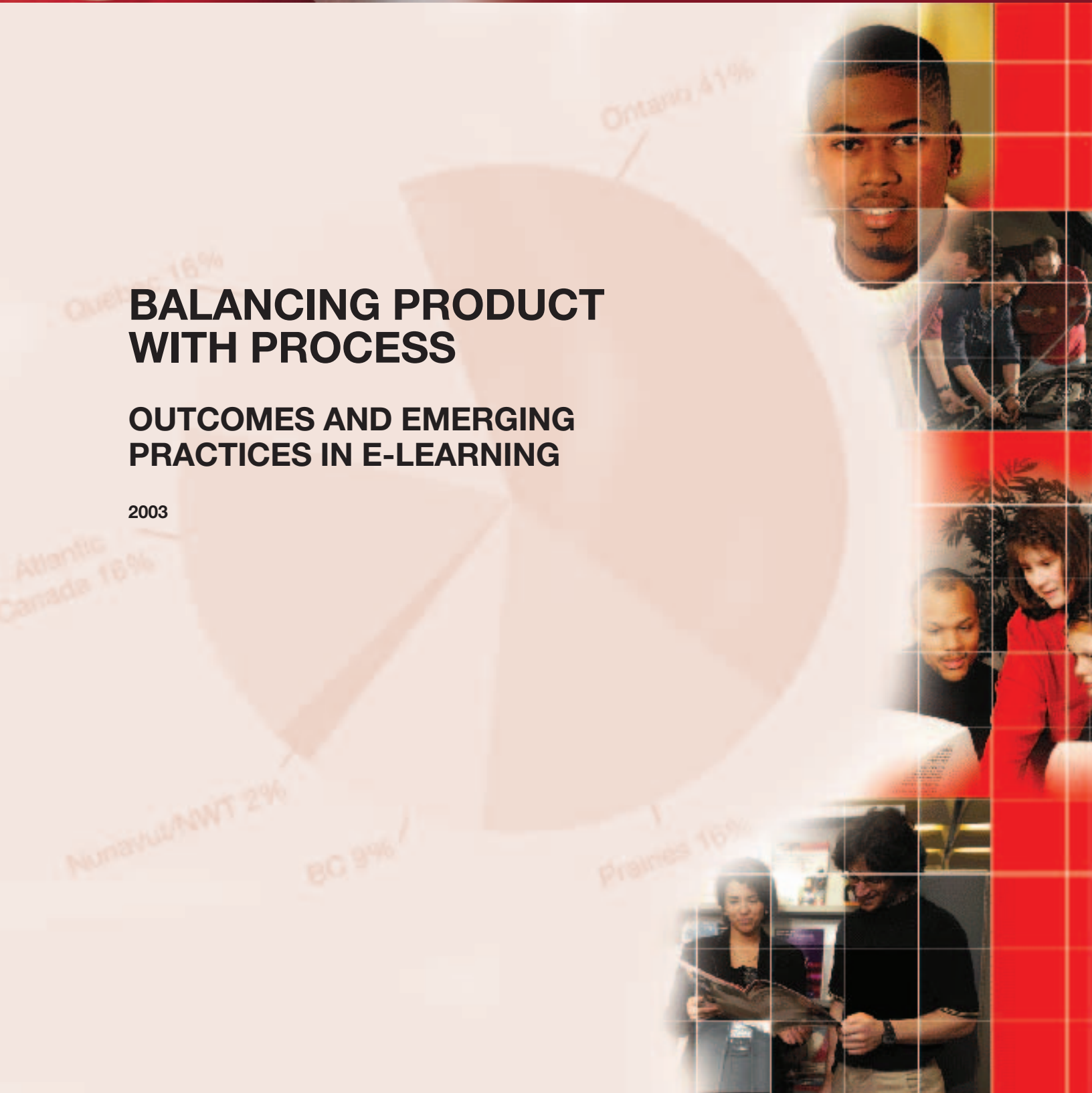




# BALANCING PRODUCT WITH PROCESS

## OUTCOMES AND EMERGING PRACTICES IN E-LEARNING

2003



*The Office of Learning Technologies (OLT) would like to express its appreciation to Yutta Fricke. Ms. Fricke developed the text of this report in order to shed some light on emerging practices in online learning.*

## **TABLE OF CONTENTS**

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<b>Definitions and Acronyms</b> .....	iv
<b>Executive Summary</b> .....	1
<b>1. Introduction</b> .....	4
1.1 The Vision, Mission and Objectives of OLT .....	4
1.2 OLT's Four Funding Initiatives. ....	5
1.3 Purpose of the OLT Outcomes Review .....	5
<b>2. Methodology</b> .....	6
<b>3. Overall Trends in OLT Funding</b> .....	7
3.1 Regional Distribution of Funding .....	7
3.2 Funding Recipients and their Partners. ....	7
3.3 Geographic Scope of Funding .....	8
3.4 Learners. ....	9
3.5 Emerging Practices in Learning Technologies .....	9
<b>4. Emerging Practices in the Use of Learning Technologies</b> .....	11
4.1 Project Goals. ....	11
4.2 Project Outcomes .....	12
4.3 Challenges to Success .....	14
<b>5. Analysis of Trends: Balancing Product and Process.</b> .....	15
5.1 The Product, with Lessons from the Field .....	15
5.2 The Process, with Lessons from the Field .....	16
5.3 Creating Sustainability .....	17
<b>6. Dissemination of Project Results</b> .....	20
6.1 Review of Dissemination Practices .....	20
6.2 Analysis of Dissemination Outcomes. ....	21
<b>7. Conclusion</b> .....	22

## DEFINITIONS

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**Asynchronous** and **synchronous** communication describes how a computer uses a modem to connect with other computers. A synchronous connection allows everyone in a group to post messages in a continuous flow, as in a chat room. Participants are online, live at the same time. An asynchronous connection allows users the flexibility to post messages and reply to them at any time. They need not be online at the same time.

**Community** may be defined by a geographic location, but may also consist of persons communicating shared interests and characteristics over distance, thanks to communication technologies.

**Digital Divide** describes the division that exists between those who have integrated Information and Communication Technologies (ICT) into their lives and others, who for various reasons are least likely to have access to computers and to benefit from learning technologies.

**Learning through technologies** refers to the use of ICT such as computers, wireless devices, the Internet, and video conferencing in promoting learning and skill development activities.

## ACRONYMS

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<b>CLN</b>	Community Learning Networks
<b>ICT</b>	Information and Communications Technologies
<b>LT</b>	Learning technologies
<b>LTW</b>	Learning Technologies for the Workplace
<b>NPLT</b>	New Practices in Learning Technologies
<b>OLT</b>	Office of Learning Technologies
<b>ReL</b>	Research in e-Learning
<b>SME</b>	Small and medium enterprises

## **EXECUTIVE SUMMARY**

The purpose of this study is to provide a comprehensive overview of Office of Learning Technologies (OLT) funded projects that ended between December 2001 and December 2002. In total, 65 projects were studied to determine the emerging trends and dissemination practices among OLT funding recipients. Of these, 43 projects were funded by New Practices in Learning Technologies (NPLT), 16 were Community Learning Networks (CLN) initiatives, two were Learning Technologies in the Workplace (LTW) projects and four were undertaken with funding from Research in e-Learning (ReL). Because the study was dominated by NPLT projects, with a fair representation from CLN, conclusions primarily reflect the experiences of these two funding streams.

The methodology used was to review the proposals and reports of the 65 projects to determine trends among the location and types of funding recipients, the learners targeted, learning technologies used, project outcomes and dissemination practices. An inventory was created with the results, and the information converted into charts. The outcomes were analyzed to determine how they responded to the objectives of the program and to examine what other trends emerged.

The results of the inventory indicate the following:

1. **Regional distribution of funding recipients:** The majority of the funding recipients were located in Ontario and Quebec. The four Atlantic and three Prairie Provinces carried out an equal number of projects, together less than half the number in Ontario. Nunavut and the North West Territories together received funding for two projects. The CLN Initiative was most balanced in pan-Canadian representation.
2. **Typology of funding recipients and partners:** The most common type of fund recipient was not-for profit, followed closely by academic and research institutes. Among partners of funding recipients this trend was the reverse. Other types (or sub-categories) of funding recipients and partners were School Districts, unions, and professional institutions or associations.
3. **Geographic scope:** In 6 of the 65 projects, the project's scope intended to reach participants living in the same geographic community. The majority of CLN projects were provincial or territorial, while the NPLT projects were national in scope.
4. **Learners:** The most frequently targeted professionals were healthcare workers, followed by educators, with most projects funded by NPLT. In comparison to the other funding initiatives, the majority of CLN initiatives targeted community groups and lifelong learners.

5. **Learning Technologies:** The most commonly used information technology was the website and the Internet. Despite the higher technological demands (including broadband servers) of real time ICT, such as chats or video conferencing, there was no significant difference in the total number of these projects compared with others demanding less advanced technological infrastructure (using forums and bulletin boards for communication). Leading edge technologies used by OLT projects included streamed internet media, webcasting and telewriter with speaker phone. In two projects, technological innovations were used to respond to the specific needs of people with disabilities.

The project goals transcend the division of projects by funding initiatives. For this reason, the analysis of emerging trends focuses on the dominant themes found in the reports, including: enhanced learning, community networking, professional/workplace skills, and research in learning through technologies. The overall lesson that emerges from the project outcomes is that the trend among successful OLT projects is to *balance product with process*. The former refers to the information technology used, and the latter to adult learning and participation in change processes. Challenges or barriers to successful project outcomes include problems with the learning technology and technological infrastructure, absence of institutional and people supports, the limited skills or negative attitudes of the users and poor planning.

According to the project outcomes, the effectiveness of the technology is based largely on the ease of access. Leading edge technologies are valuable only when these enhance rather than diminish ease of access. Visual and audio components of learning technologies are particularly effective in learning situations that require demonstration of physical interaction, for instance between a healthcare worker and a client, and also when the target audience has diverse learning needs, based on low level literacy, English-as-a-second-language or disabilities.

The advantage of “anytime anywhere” in distance learning must be balanced with measures to counter the feeling of isolation among learners. Successful projects highlighted the availability of a variety of technical and learning supports to the individual learner, including opportunities for peer interaction. It was noted that good andragogical practices for the classroom also apply to distance learning. As well as supporting the individual, several projects recommended that the introduction of new technologies into a workplace or a community should be considered as a “change process.” Success is based on creating a shared sense of purpose.

The creation and nurturing of partnerships is key to creating sustainability of OLT project efforts. Other strategies described to create sustainability are the integration of project outcomes and new practices into regular program activities and budgets, diversification of funding, including by creating business opportunities, and the introduction of institutional policies and structures to support learning technologies.

Project results are most commonly disseminated through the use of a project website. Many funding recipients create links to other websites, for instance, from the university faculty coordinating the research. The NPLT funding recipients shared project results with their peers through presentations at formal, generally academic, conferences and through the publication of results in journals. There was some indication, including by ReL funded research, that more effort could be made by academics to disseminate results to the field of practice. Almost half of CLN projects disseminated project results through membership newsletters and meetings. According to the reports, only three of the 65 projects made use of public media, such as radio, television and newspapers to alert the public about the OLT projects.

Project marketing and promotion during the life of the project is directly linked to the dissemination of the results. The development of partnerships as a form of networking is one effective way to create interest and spread information about the project. Communication strategies were generally not included among project activities; this may have affected the attention paid to this aspect of dissemination.

# 1. INTRODUCTION

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This review of OLT outcomes provides a snapshot of the contribution of OLT to the promotion of learning through technologies in Canada, focusing on projects *ending* in the period between December 2001 and December 2002. OLT's priorities have evolved since the initiation of those projects, so that a review of its objectives and funding initiatives as posted on the website today would look quite different. For instance, whereas projects funded through the New Practices in Learning Technologies were prominent among the projects reviewed, currently OLT focuses entirely on Community Learning Networks, with an increasing emphasis on targeting populations affected by the Digital Divide.

## 1.1 The Vision, Mission and Objectives of OLT

**Vision:** The Office of Learning Technologies promotes innovative lifelong learning opportunities for Canadians.

**Mission:** The Office of Learning Technologies engages partners and sponsors using technology to enhance learning and skills development, allowing Canadians to participate fully in the workplace and their community.

As one of many public participation programs of Human Resources Development Canada (HRDC), the Office of Learning Technologies helps raise awareness about the opportunities, challenges and benefits of technology-based learning and acts as a catalyst for innovation in the area of learning and skills development enabled by technologies.

OLT's objectives during the period relevant to these projects were to

- Promote the effective use of learning technologies,
- Support the assessment, research and testing related to the use of learning technologies,
- Increase the availability and sharing of knowledge and quality information about learning technologies.

Recently, to better align its activities with the emerging skills and learning agenda, HRDC focused OLT's programming on support for Community Learning Networks. The objectives were revised accordingly.



## **1.2 OLT's Four Funding Initiatives**

OLT achieves its objectives through contribution funding, awareness activities, and research initiatives. OLT engages partners and sponsors that use technology to enhance learning and skills development, allowing Canadians to participate fully in the workplace and their community. Until 2002, OLT offered budgetary support to applicants through four funding initiatives. Each of these is outlined below.<sup>1</sup> Further details about the objectives of the funding initiatives, and their fulfillment, are offered in Section 4.

### **New Practices in Learning Technologies**

(NPLT) funds cost-shared projects that contribute to the understanding, development, and awareness of new and effective practices in the use of learning technologies to respond to the learning needs of Canadians.

**Community Learning Networks (CLN)** supports time-limited pilot projects that focus on the use of technologies as tools to support and enable learning and networking. The pilot projects may build on current or develop new models that other communities can learn from in order to promote and increase access to learning opportunities enhanced by technologies. CLN projects involve strong community participation and decision-making.

**The Learning Technologies for the Workplace (LTW)** develops partnerships with non-profit organizations, industry associations, and educational institutions. It provides funds on a cost-shared basis for projects that demonstrate the application of learning technologies (LTs) to expand opportunities for learning and skills development in the workplace.

**Research in e-Learning (ReL)** supports research to provide timely and forward-looking information on the emerging trends, issues and challenges facing adult learners as they adopt learning technologies.

## **1.3 Purpose of the OLT Outcomes Review**

Funding recipients provide OLT a detailed report about their activities and related research upon completion of their projects. The purpose of this study is to provide a comprehensive overview of OLT-funded projects that ended between December 2001 and December 2002. By identifying emerging trends and dissemination practices among the projects, the study will assist in determining the contribution of OLT to moving Canada toward a knowledge-based economy and closing the Digital Divide. The results will be used to inform OLT program planning, and identify areas for improvements.

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<sup>1</sup> For more information about the OLT program, please see <http://olt-bta.hrdc-drhc.gc.ca>.

## 2. METHODOLOGY

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The methodology was based on a review of 65 projects from across Canada. The projects were studied in view of their fulfillment of OLT's vision, mission and programmatic objectives, as well as the objectives and priorities of the four funding initiatives described above.

Using project proposals and reports, a project inventory was prepared for each of the funding initiatives. Of the total of 65 projects, 43 were NPLT initiatives, 16 were CLN projects, 2 were LTW projects and 4 were ReL projects. The overall trends were recorded according to the regional distribution of the funding, the sector of the funding recipients and their partners, the geographic scope, the learners targeted, the technologies used and the dissemination practices. The results were organized into tables and charted to provide a comprehensive overview and to draw general conclusions about the findings.

The next stage of the study focused on the project outcomes and emerging practices (Section 4). The review began with a comparison of the goals of the 65 projects with the objectives of the relevant four funding initiatives to determine how these were being addressed. It was found that the project goals transcended the division by funding initiative and that a more accurate picture of OLT's impact is offered by organizing the projects by the sectors and activities targeted by the goals, including enhanced learning, community networking, professional and workplace skills, and research in e-learning technologies.

The final stage of the review was the analysis of the outcomes. In addition to examining examples of learning technologies and practices among the outcomes, the analysis included a review of strategies to ensure project sustainability and dissemination of

project results. Generally, what emerged from the project findings was an overall theme of *Balancing Product with Process*. Conclusions were drawn based on the analysis.

Three factors should be noted that affected the methodology and results of this review. One of these was the differing quantity and nature of information provided by the reports. Some were very brief and did not address all issues discussed in this review, nor the original objectives the funding recipients had set out in their proposal. Even very lengthy reports often focussed on the evaluative research undertaken without reference to the various other activities set out in the proposal, for instance regarding dissemination of the results. During the reporting period reviewed, OLT instituted new guidelines for writing final reports. These have had a significant impact on increasing the quality of the reports for measurement and comparative purposes.

A second element that effected the review was the imbalance among the number of projects available for review from the four different funding initiatives, with the vast majority of projects funded through the NPLT initiative, and only a handful pertaining to the CLN, LTW and ReL initiatives. This reflects the history of OLT's evolution over the last number of years. The review of LTW and ReL is therefore intended to provide only a snapshot of their impact, rather than be used for comparative purposes with other funding initiatives.

Finally, it should be noted that there is some inherent subjectivity involved in the choice and categorization of information provided by the reports. To maximize objectivity, and the opportunity to accurately replicate a part or all of this study, explanations of how data were interpreted are included throughout the report. It is hoped that as a result, the current review may in some way provide a baseline for future studies.

### 3. OVERALL TRENDS OF OLT FUNDING

Using the results of the inventory of 65 projects, conclusions can be drawn regarding *where* OLT projects are taking place, *who* is receiving OLT funding, *who* are the targeted learners, *what* technologies are being used and *how* the information is being disseminated.

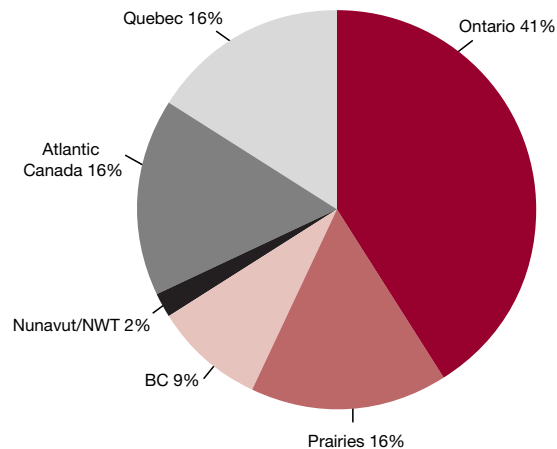
#### 3.1 Regional Distribution of Funding initiatives

The aim of the review of the regional distribution of funds was to determine how balanced OLT project representation is throughout the country.

##### Major Findings:

1. The majority of the funding recipients are in Ontario. Quebec carries out one third the projects of Ontario, and BC slightly less. There are two factors at play, the population density of these locations and the proportion of national and academic institutions located particularly in Ontario.
2. The four Atlantic provinces (New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador) and three Prairie provinces (Manitoba, Saskatchewan and Alberta) have carried out an equal number of projects, respectively less than half the number in Ontario.
3. Nunavut and the North West Territories have received funding for two projects, which would be comparable to provinces in the Prairie or Atlantic regions.
4. The CLN funding initiative is most balanced in pan-Canadian representation.

Chart 1  
Regional Distribution of Funding Recipients (n=65)



#### 3.2 Funding Recipients and Their Partners

The four different funding initiatives are each focused in different areas or sectors: NPLT and ReL in research, CLN in community initiatives, and LTW in the workplace. An inventory of funding recipients and another of the partnerships they created were used to determine the relative significance of each of these sectors to OLT. “Not-for-profits” include a wide variety of national, regional and local community organizations and associations. Some of these are School Districts, unions, and professional institutions or associations.

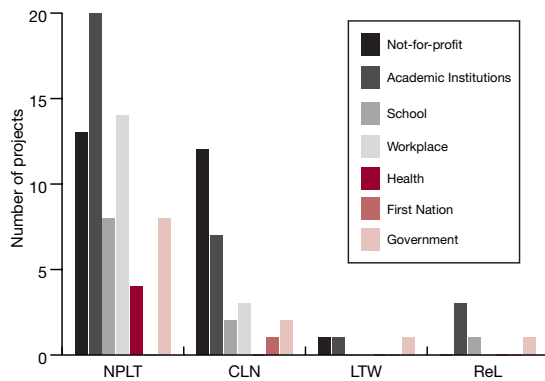
##### Major Findings:

1. The most common type of funding recipient is a not-for profit, followed closely by academic and research institutes. In respect to partnerships created, the reverse is true. Here, academic and research institutes have a slight majority.

2. A total of 12 of the 65 projects, or 18%, partnered with government bodies.
3. Schools and healthcare institutions are the two most represented workplace partnerships, with healthcare partnerships limited to NPLT.

The following chart does not reflect the total number of partners, rather the range of partnerships established by OLT funding recipients.

**Chart 2**  
**Typology of Partners by Funding Initiative**



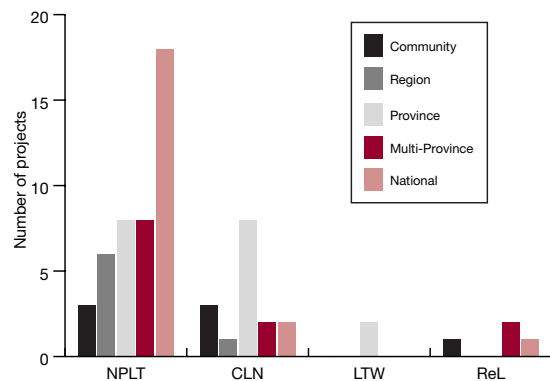
### 3.3 Geographic Scope

Even though a funding recipient is located in a certain province, the scope of the project may be much broader. The purpose of the review of the geographic scope was to determine how broad a population is potentially impacted by the individual OLT projects. Please note that pilot projects taking place in one location with results to be shared nationally, are considered to be “national.” The term “regional” refers to a region within a province. Projects involving more than one province, in the Atlantic region for instance, are designated as “multi-provincial”.

### Major Findings:

1. Six of the sixty-five projects targeted participants living in the same geographic community. The vast majority of projects relied entirely on cyber-space to create or nurture a sense of community among the participants.
2. The majority of the NPLT projects were national in scope, whereas the majority of CLN projects were provincial or territorial.
3. Projects that focused on regions within a province generally included rural and isolated learners.
4. In three cases, the projects created international interest, with project networking taking place with institutions in the United States and Europe, and in one case resulting in potential project replication in Asia and the Middle East.

**Chart 3**  
**Geographic Scope by Funding Initiative**



### 3.4 Learners

The OLT funding initiatives aim to impact learners in educational institutes, in the community and in the workplace – everywhere lifelong learning takes place. In order to determine the relative impact OLT is having on various population groups, the project review categorized and calculated the types of learners affected by the projects.

Given the large proportion of healthcare workers and educators among the professionals targeted by the NPLT projects, these were counted separately. Other “professionals” (as noted in the chart) include computer technicians, adult education coordinators, trade unionists, entrepreneurs and a business community. “Community” groups that were impacted by the projects were defined not only by geographical boundaries, but also by shared interests and unifying characteristics, like culture. Targeted community groups, like a network of caregivers, were distinguished from individual lifelong learners. There is some overlap between the two groups.

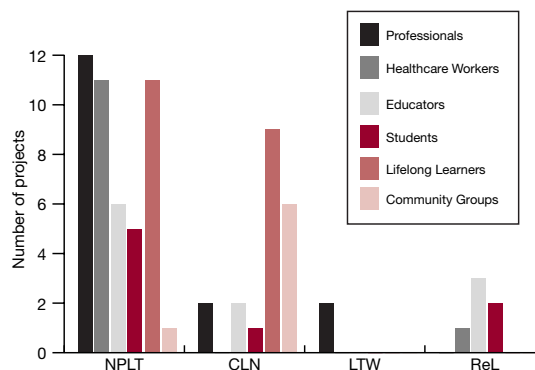
Included among the lifelong learners targeted, particularly by CLN, were populations that are affected by the Digital Divide. The Digital Divide refers to individuals who, for a variety of reasons, are less likely to have integrated computers and learning technologies into their lives. These include Aboriginal populations, seniors, and persons with a low level of literacy and people with disabilities.

### Major Findings

1. The most frequently targeted profession is healthcare. Its OLT support was received almost entirely through the NPLT Initiative.
2. Next to healthcare professionals, the next most frequently targeted group is educators (by the NPLT initiative), sometimes in combination with students.
3. In comparison to the other funds, CLN most frequently targeted community groups, including lifelong learners.

**Chart 4**

**Types of Learners – by Funding Initiative**



### 3.5 Emerging Practices in Learning Technologies

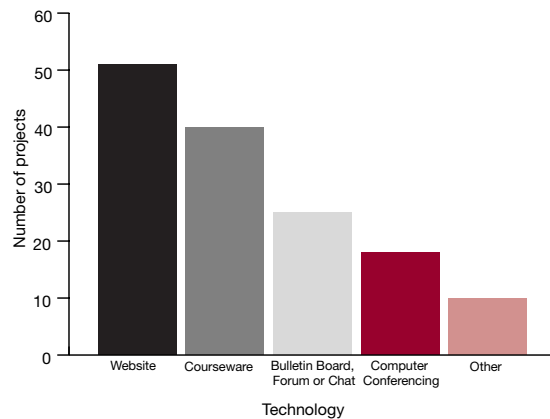
All OLT projects have learning technologies in common. Some experiment with a variety of “leading edge technologies,” particularly NPLT. Others are focused on increasing the skill and comfort level of computer novices, who are accessing the Internet for the first time. An inventory was created to determine the trends among learning technologies used by OLT funding recipients, with the results described below. Specific comments about the technologies can be found in Section 4.

**Major Findings:**

1. All the funding recipients made broad use of technologies, with NPLT using a proportionally greater variety than CLN.
2. The most commonly used information technology is websites and the Internet. (OLT asks that websites be used to disseminate information about project results.)
3. There is no significant difference in the use of technologically advanced ICT, such as video conferencing, reliant on broadband server connections, compared with others demanding less advanced technological infrastructure (using forums and bulletin boards for communication).
4. “Other” technologies used by OLT projects included streamed internet media, webcasting and telewriter with speaker phone, camcorder and fibre optics.
5. OLT partners used a large variety of learning software, such as Hyperstudio, Authorware, Learning Village and software for web page creation and layout.
6. Visual and audio potential of LT were particularly effective in learning situations that required demonstrations and when the target audience had diverse learning needs, for instance according to literacy and language.

7. In two projects, technological innovation was used to respond to the specific needs of people with disabilities. One project introduced refreshable Braille. The other customized interfaces accessed through an “ability engine,” including touch screens, screen readers, audio prompting and innovative voice mail utility.

**Chart 5**  
**Learning Technologies –**  
**All Funding Initiatives**



## 4. EMERGING PRACTICES IN THE USE OF LEARNING TECHNOLOGIES

While formal or institutionalized education ends for most of us in our teens or twenties, *learning* continues throughout our lifetime. Computers and learning technologies facilitate easy access to information resources and training to enhance the learning that takes place in daily living.

The review of OLT outcomes confirms the significance of learning technologies to all aspects of our lives. In this section, the emerging practices in the use of IT are reviewed according to four major themes identified among the OLT funding recipients' goals and project reports: enhanced learning, community networking, professional and work-place skills, and IT research and guidelines.

### 4.1 Project Goals

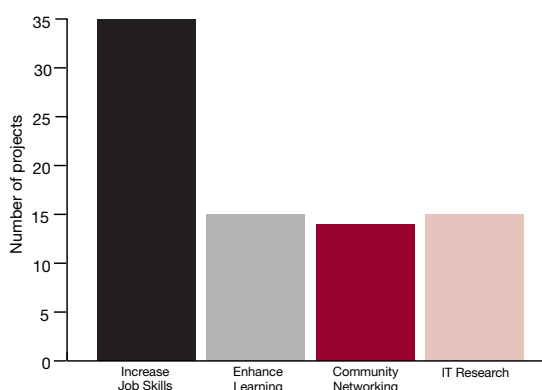
#### Major Findings

1. More than half of all the projects reviewed (65%) sought to increase the professional and job skills of Canada's workforce, either through on-the-job distance education or skill upgrading.
2. In most cases IT was the means and not the primary goal of the project, for instance as a vehicle for transmitting the information to healthcare workers in remote locations. In 11 of the 43 NPLT projects, the experimentation and evaluation of the technologies was the main purpose of the project goals. Some of the latter projects resulted in new guidelines for the use of learning technologies.

3. The goal of life-long learning was met by diverse projects aimed at: a) increasing IT use either among Francophones outside of Quebec, unemployed persons, school drop-outs or seniors, b) providing medical information to clients with low-level literacy, and c) gathering community knowledge in the North through the creation of a virtual museum (these are examples).
4. Many of the CLN projects are aimed at increasing knowledge and skills for labour market outcomes, in combination with the creation or enhancement of community networks.

The chart below provides a summary of the overall goals of the projects. In many cases the assessment of a learning technology was combined with another skill-specific learning goal. Because some projects therefore had two overall goals, the total number of goals exceed the total number of projects reviewed.

Chart 6  
Project Goals





## 4.2 Project Outcomes

Like the project goals, the project outcomes are organized around four themes: enhanced learning, community networking, professional and workplace skills, and IT research and guidelines. The conclusions are drawn from the final reports of the 65 OLT projects.

### Enhanced Learning

*“The training and assessment tools for numeracy and literacy skills used here will enhance the provision of education and training to the North. The project provides proof that online literacy instruction and assessment can be done with ICT.”*

Whether providing literacy training to isolated learners, increasing the independence of blind students through refreshable Braille, or providing French-language learning resources to Francophone communities outside of Quebec, the learning technologies introduced by OLT projects provided new and innovative ways of meeting the diverse learning needs of Canadians. Other learning outcomes were increased motivation among students acquiring a new language, the development of entrepreneurial skills among under-employed Canadians, and, most often, the introduction of flexible hours and locations for adults trying to integrate new learning into busy work and home-life schedules.

### Community Networking

*“Many experienced the online environment as a community, where common interests and shared experiences helped to build relationships and bond the community members in a common purpose to improve their practice.”*

*“With the creation of the Urban Black Community Learning Network, visitors from Canada and around the world have gained access to an extensive resource database ... on African and Caribbean cultural information and networks.”*

*“An accessible virtual community for learning and support has been created for people with an intellectual disability, their families, support networks and staff.”*

A significant outcome of the OLT projects is the creation of communities where formerly they did not exist. No longer confined to a place, these virtual communities clearly meet the criteria of community, as determined by shared values, experience and interests. For some project beneficiaries, the projects managed to ease the sense of isolation experienced as a result of geography, of being in a cultural minority, or as a result of compromised mobility (affecting particularly seniors and people with disabilities). For others, new partnerships and networks between academic, not-for-profits and business sectors assisted in creating shared community goals.



### **Professional and Workplace Skills**

*“To our knowledge, this project demonstrates for the first time successful use of the Internet to deliver online training for frontline health-related field workers in Aboriginal communities.”*

*“Workplace relationships improved and career skills and perspectives increased as a result... Surveys showed participant satisfaction in their technology training, with a positive impact on their self-confidence... The number of staff learners has risen from 250 to 1500.”*

Many of the projects reviewed targeted professionals and workers, who required on-going training to keep up with the changing demands of their field of practice. In some cases, the learning technologies were used to create a system of peer support and collegiality among colleagues with similar jobs, but in distant locations. In all cases, positive outcomes included new knowledge and support systems for workers. Several reports mentioned the increased use of IT in the workplace beyond the original expectations. Management commented that IT had an important influence on worker motivation. One of the OLT project reports noted that increased business opportunities resulted from the OLT project.

### **Information Technologies Research**

*“The medium of the on-line information-sharing symposium was ‘also the message’ – a eureka moment.”*

Four of the projects reviewed were funded by OLT’s Research in e-Learning initiative. One of these examined the role ICT plays in introducing educational innovation and concluded that ICT is often a catalyst, or at least a contributing factor, to innovation. Other ReL research regarding the use of ICT by university faculty suggests that, aside from educators offering distance courses, ICT is still used primarily for class administration, and not for advanced preparation and presentation of learning content. A third project developed an evaluation model for technology-mediated practice-based learning.

Many other OLT projects combined research and evaluation of information technologies into other learning contexts. For instance, *Audiographics* technology (combination of online computer and telewriter and speakerphone system) was tested and used successfully to offer literacy and numeracy training. Other projects evaluated the comparative merits of various learning technologies. Several projects determined that visual online content is valuable in that it allows distance learners to benefit from physical demonstrations and case presentations. One evaluation of IT in distance learning concluded that discussion board communication was most appreciated among students, although turn-around time could be lengthy. Teleconferencing and chat-rooms were praised for the immediacy of communication, but complaints were made about the scheduling of these interactions and the inability of some students to keep up with the flow of the discussion. Several projects used their test results to develop new guidelines, both for the production of courseware and the use of IT for adult distance learning.

### 4.3 Challenges to Success

In addition to the many positive outcomes reported by OLT funding recipients, some projects fell short of achieving their goals. The lessons learned by these partners are equally valuable to future OLT initiatives. They are summarized below according to the five themes they address.

#### Access to the Technology

Issues related to technological access were among the most common impediments to project success. Often the problems resulted from technical limitations related to the available bandwidth. In some cases, simply the lack of available computers prevented project success. User surveys highlighted complicated program access as a major barrier to learner satisfaction and a reason for reduced usership. Specific learner recommendations included *easier installation, with no need to reprogram at each sitting, improved navigability, and a reduction in multi-media content*. One funding recipient commented that the use of a template to build the website failed as it was too constrained.

#### Absence of Institutional and People Supports

Some projects took place without broad institutional, management, or even technical support. The result was that both distance educators and learners felt that their efforts – and the considerable amount of time required – were not being recognized. One project reported that *“The objectives were not met to the degree anticipated due to the work required, bureaucracy and costs for a shared platform, that were higher than anticipated.”*

#### Overestimation of Users' Computer Skills

Project coordinators cited an overestimation of learners' technical skills as another reason for not meeting project objectives. Learners became frustrated with the program and then avoided it. One report concluded: *Students showed interest in the courses, but many students were technically challenged by the ICT. The students' skill level and comfort with ICT was variable, which led to low use of the online computer conferencing component.*

#### Negative Attitudes of Users

Several reports noted technology intimidation as a significant barrier to project success. Users were also reluctant to become involved given the time requirements and the isolation. One project was doomed at the outset, because the teachers targeted by the project believed it would not benefit them personally, but was being imposed upon them to make their employer more competitive.

#### Unrealistic or Poor Planning

*“This very sophisticated tool (Cousineau tool) was introduced at the outset to the participants... This strategy backfired. It ended up overwhelming teachers... As a consequence, the platform became the focus of critique, rather than a vehicle for the exchange of public, professional knowledge.”*

Several OLT project reports described what they would do differently next time. Through the experience of the projects, they learned that *“it is not realistic to expect technology to do everything.”* They also realized that it cannot be assumed that volunteer mentors will be on hand to train senior learners at CAP sites, or that at risk youths will want to train to become entrepreneurs. The development phase integrated into the current CLN program will assist in improving the planning processes.

## **5. ANALYSIS OF TRENDS: BALANCING PRODUCT AND PROCESS**

What becomes evident in reviewing the successes and challenges of OLT funded projects is that successful projects give equal attention to the choice of appropriate technologies and the process of introducing or promoting these among the learners. Section 5 of the *OLT Outcomes Review* focuses on good practices and advice from and to OLT funding recipients. It will address issues concerning the learning product, the learning process and how to ensure sustainable results.

### **5.1 The Product, with Lessons from the Field**

*“Successful continuing education relies on two factors: efficient access to educational content and the instructor’s ability to provide appropriate educational content at the right place and at the right time.”*

The OLT projects included in this Outcomes Review used a large variety of technologies to provide “efficient access.” According to the project outcomes, project success does not have as much to do with leading edge technology as it does with “efficient access” to the technologies, whether this is determined by bandwidth or site navigability. Time constraints were in fact noted in several reports as a significant factor to successful adult learning. The most common combination of technologies included: Website and Internet for information resources; chat lines, bulletin boards and one-on-one email correspondence for the majority of interaction; and some “real-time” online discussions including

video-taped conferences. Less common leading edge technologies, like audio-streaming, were criticized on several occasions as being more trouble than they were worth.

While efficiency may be a reason to use the tried and proven technologies in most cases, sometimes it is also the reason to venture into new territory. For instance, the simulation of experiential learning, via computerized video, was considered critical to distance education courses focussing on veterinary science and physical therapy. Both reports claimed that the visual aspects of the training were key to explaining interactions with patients.

Similarly, leading edge technologies were a key component in the two projects focussing on disabled persons, for whom the more standard technologies are still not ideal. Technologies tested for disabled persons include refreshable Braille, and the “ability engine,” which customizes the ConnectABILITY Website for its individual client needs, including with touch screens, screen readers, audio prompting and innovative voice mail utility. The ConnectABILITY report states that as a result of the project, *a robust, integrated set of functionalities support a range of accessible information, learning and communications needs. A series of content modules were developed, with related “ask the pro” live chats. Other technologies used include text messaging, chats in bulletin-format and real-time, audio streaming, and a database with a management system.* Perhaps the experimentation that is taking place to accommodate diversity among people with disabilities will lead to increasingly effective technological practices for all Canadians.

One project example of the effective and efficient use of learning technologies for distance education is provided by the “Physical Rehabilitation Distance Communication Initiative”. The educational goal was to provide physiotherapists with multi-media interactive educational resources that they can *access anytime from anywhere* (the learning technologies’ mantra). According to their report, *“currently, a new Microsoft Windows based personal computer, office suite software, an Internet connection, and video capturing accessories are all that are required for remote access to quality educational materials and specialized expertise.”* Since many aspects of physical rehabilitation rely on vision and touch, the project relied on video-based multimedia content. The technical emphasis was placed on user-friendly, consumer level software and hardware, which field staff and students could use to both create and present the learning modules (25 in total). A Camcorder was used for the video taping. Audio/video/text data were then integrated into office suite presentation software (Corel Presentations, Microsoft PowerPoint). Presentation software was then used to create handouts, slides, overheads, CD-ROM, web pages, streaming media, Internet-based video conferencing whiteboard pages, and output for a laptop computer projector. (See also [www.rehab.on.ca/mobile/present\\_e.html](http://www.rehab.on.ca/mobile/present_e.html).)

## **5.2 The Process, with Lessons from the Field**

*“Typical characteristics of the adult learners: Generally, they are more self-directed than dependent, and motivated by the desire to use or apply knowledge and skills in a practical, rather than an academic or theoretical manner.”*

OLT funding initiatives are oriented to adult or lifelong learners. According to the OLT project reports, project success is as dependent on knowing the learner and his or her needs, as it is on the ease of access to the learning technologies. To be effective projects must consider effective pedagogical practices. In many cases, they must also consider the introduction of learning technology practices as a change process.

### **Effective Pedagogical Practices**

The number one advantage of learning technologies for adults is that content can be accessed “anytime from anywhere.” The isolation this implies can, to the contrary, be the greatest disadvantage to distance learning. Repeatedly, successful projects highlight the efforts made to maximize interactivity with a moderator or teacher and with the other learners:

*“The moderator was identified as instrumental in encouraging participation, trouble-shooting technical issues, and facilitating learning through an understanding of the local context.”*

*“In comparison to an average 20-30% completion rate, 77% of the students completed the course. Participants were unanimous in the opinion that the Learning Circles were one of the most useful learning support strategies. The Bulletin Board kept participants in touch with each other, across regions, on a daily basis. The regional coordinators were also highly rated, because along with the Learning Circles, and the project administrator they added the human touch, expertise and knowledge that is absent in other long-distance courses.”*

Along with interaction, projects highlighted several other important conditions for successful adult learning: a manageable course load, stimulating learning environment and content, including practical application of knowledge, learner-centred class structure, feedback to learners, and workplace recognition of additional time commitments and increased skill levels as a result of participation.

*“The diversity suggests the need to work in partnership with the target audience to adapt and customize the course, in the framework of a flexible, learner-centred course structure, to accommodate the special needs of target learners.”*

### **The Change Process**

*“The context in which learning technologies evolve is key to the likelihood of adoption. The introduction of IT is not just hardware and software, it must be seen as a change process.”*

Several of the barriers to successful project outcomes listed in Section 4 were neither related to the technology, nor to adult pedagogy. Instead the stumbling blocks to success resulted from the broader context in which the learning technologies were introduced. For instance, in one case, the teachers affected believed the introduction of learning technologies was entirely related to institutional competitiveness and not their own needs. In order for adults to adopt new practices, they must be motivated by the real advantages that change presents and their efforts must be acknowledged. This helps to create a shared sense of purpose. Equally important, the new initiative must also be flexible enough to accommodate the needs of the participants.

### **5.3 Creating Sustainability**

OLT encourages project sustainability in a variety of ways, including by:

- providing funding for a project development phase including the establishment of partnerships,
- requiring non-OLT budgetary commitments,
- prioritizing learner involvement in projects,
- funding project evaluations to monitor progress and make necessary adjustments
- ensuring that the funding recipients plan and carry out dissemination activities (discussed in Section 5.5)

OLT reports offered their own insights into what strategies are useful to creating sustainability. Some reports also shared why their projects' sustainability is in jeopardy. Comments are summarized below according to the predominant themes.



## **Partnerships**

Because “other in-kind and/or cash contributions” toward the projects are a requisite for funding (up to 50% of the project total), funding recipients tend to be preoccupied with the financial aspect of partnership development. While shared financial responsibility is one part of ensuring sustainability through partnerships, others are increased commitment and access to expertise. However if solid partnerships add strength to a project, then weak partnerships may jeopardize the project’s future. OLT reports underline the importance of time and resources invested into open communication and shared decision-making among successful partners.

*“One of the key lessons of this project is that the forging of partnerships requires considerable commitment from both parties. Those considering entering into partnership must be prepared to invest substantial time and energy into the harmonization of administrative, academic and technical systems. Communication channels must be established and maintained to promote ongoing consultation and to ensure that both partners are kept informed of even subtle changes in intent or circumstance.”*

Many OLT funding recipients cite partnerships as essential to their project’s success:

*“Partnerships were key to the creation and sustainability of the Urban Black Community Learning Network (UBCLN). ... The challenge of building an information culture within the community*

*is a complex task and should not be left to one interest group, organization or professional sector of the community. A broad range of partnership is required... As awareness of the UBCLN spreads through the local, national and international communities, the reach and impact of the project fosters its continual growth. Enhancements originate from the input of partners who become participants and stakeholders, making the UBCLN more versatile, useful and appealing to all who use it.”*

## **Learner Involvement**

The importance of learner involvement was also described by OLT funding recipients as central to their project’s success. Like partnerships, learner involvement in decision-making must be included from the start of the project and nurtured throughout.

*“Given the great diversity of cultural, linguistic and educational backgrounds in the target audience, the Centre for Indigenous Peoples’ Nutrition and Environment (CINE) created strong partnerships to identify potential barriers and explore strategies to overcome these. Consultation included an Aboriginal steering committee and feedback from Aboriginal consultants and nutritionists/health promotion planners working closely with online course participants. Over the course of this project, CINE communicated with almost 300 people living and working in 50 northern communities, including 153 individuals who were recruited to take the courses.”*

### **Institutionalization of Innovation**

When a project becomes an integrated feature of an organization's regular activities and related budget, its sustainability is assured. OLT funding recipients noted that learning outcomes of their projects had become part of the orientation program for new staff and that on-going programs had been established for faculty and students to produce new learnware.

The coordinators of another OLT project feared their otherwise successful project would not be sustainable due to university restrictions on faculty involvement in community development. ReL researchers also noted the barrier presented to on-going technical innovation in schools, as long as new practices rely on *"the intensive voluntary work of staff."*

The project, *Accessible Adult Learning in the Health Profession: Interactive Use of Technology* offered these recommendations to promote sustainability of LT in educational institutions:

*"Develop a university policy for distance education, market and give general public visibility to distance education and develop a centralized, coordinating infrastructure."*

*"Within faculties, it is recommended that there be a technology support person who can problem-solve technical issues with faculty and/or individual students; support faculty through workload, mentoring or direct resources to develop necessary skills."*

### **Diversified Funding**

Although sustainability is only in part based on finances, sustainable funding is crucial particularly for community not-for-profits, and tends to be a preoccupation. The CLN-funded project, ConnectABILITY, described in its report several strategies being considered as components of a sustainability model. These include:

1. **Redirecting internal resources:** *The project concept is being implemented as an integrated part of service delivery. It is ... already enhancing the skills of staff and the quality of supports provided.*
2. **Corporate partnerships:** *This could include direct linkage from the website to a company's services or ongoing display's of a corporation's logo and name.*
3. **Other social service agency partnerships:** *This would assure a continuous flow of content to the website.*

## 6. DISSEMINATION OF PROJECT RESULTS

The impact OLT can have in advancing the use of learning technologies in Canada is increased significantly through the dissemination of project results. The value of research and the experiences of small pilot projects are limited to those directly involved, unless the lessons learned are shared with many more Canadians facing similar challenges. For this reason, OLT places a high emphasis on dissemination.

### 6.1 Review of Dissemination Practices

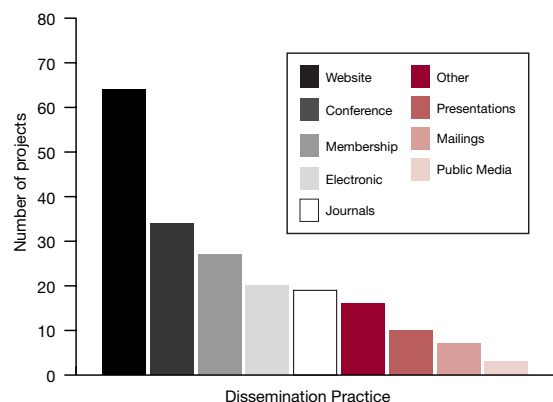
#### Major Findings

1. The use of a project website to disseminate results is common to all projects, as specified by OLT. Many funding recipients create links to the project website from other websites, for instance, from the university faculty coordinating the research.
2. The next most common form of dissemination of results is through presentations at formal, generally academic, conferences. This reflects the high proportion of NPLT projects included in the study with a focus on enhanced learning.
3. In addition to websites, almost half (44%) of CLN projects disseminated information through membership newsletters and meetings. Other common methods included conferences and community presentations.
4. Articles appeared in academic journals as a result of 19 of the projects.

5. According to the reports, three of the 65 projects made use of public media, such as radio, television and newspapers to alert the public about the OLT projects.
6. Five projects disseminated information internationally, including to the US, Ireland, Scotland, the Netherlands, and China.

The following chart provides an overview of the dissemination practices of OLT funding recipients. Much of the diversity in dissemination practices is found among CLN projects. Because all projects used their website to disseminate results this method was not charted. Dissemination to “membership” includes newsletters, listserv, emails, CDroms and meetings with members. “Electronic” dissemination, other than the website and Internet, includes video, on-line symposiums, simulation exercises, CD Roms. “Other” means of dissemination include a chapter in a book, a thesis, an official launch, a public information display, website addresses on business cards and the creation and distribution of maps.

**Chart 7**  
**Dissemination of Results – All Projects**





## **6.2 Analysis of Dissemination Practices**

The efforts of funding recipients to disseminate project results are variable. Some of this variability is inevitably tied to the motivation of the funding recipients. OLT contributes significantly to this motivation by insisting on the development of project websites. However, beyond this, the organizations and institutions must have their own reasons for wanting to share their information. Given that the results only appear at the end of the budgetary cycle, they will likely also need some of their own resources.

A significant motivator among researchers and university personnel involved in OLT projects is likely to be the individual career path. Publishing papers and making academic conference presentations bring their own compensation. Considering the predominance of distance learning as a common theme among the journals and conferences cited, these are one important avenue for reaching the experts. Examples include the *Journal of Distance Education* and the conferences of the *Canadian Association for Distance Education* or the *Telelearning Conference*.

What is less obvious than information sharing among academic experts is how this information is transmitted to communities and professionals, who can apply the theory to their common practice. A ReL project, which evaluated the use of ICT in the classrooms, concluded that the transfer of knowledge must be improved.

One funding recipient described the various strategies planned to have project results reach all levels of the organization with varying levels of detail.

*“An overview of the results will be presented in UFCW publications, including Our Union and newsletters. A pamphlet will be published to*

*promote learning technology. The report will be distributed throughout UFCW (presidents, training directors, and interested union members), as well as the broader labour movement in Canada (CLC).”*

### **Project Marketing**

Projects which described strong plans for the dissemination of results often integrated these into a promotional strategy that spanned the life of the project and included its on-going project promotion. Particularly the CLN projects in the process of creating virtual communities sought out a variety of means to let people know about their project:

*“Presentations will be made at the Kiwanas Trade Show, Aboriginal Youth Conference, Strategis Training, Mentorship Education Sessions, E-Business Basics, Official Enterprise Online Launch. In addition the Web address will be published on all correspondence and business cards.”*

Another project noted that *“the diversity of partners, resources and networks involved in this project provided enormous diversity to the learning, and will in turn maximize the dissemination of the outcomes.”*

The project that stands out in its ability to generate national and international media interest is the CLN project, *Video-conferencing, Education and Community Development: A Demonstration Project*. It is noteworthy that the development of a communications strategy was integrated into the project activities:

*“Media coverage included the Aboriginal Peoples Television Network, CBC North’s Northbeat, CBC local and national radio and Nunatsiaq News. Articles were published in Above & Beyond Magazine, the New York Times, the Canadian Museum of Nature’s newsletter and NatureScene.”*

## 7. CONCLUSION

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In the period ending between December 2001 and December 2002, OLT's greatest involvement was with professional groups, particularly in the area of health and education, with the majority of these located or headquartered in Ontario and Quebec. As OLT's priorities recently moved to Community Learning Networks, emphasis will shift away from professional groups and toward community groups and lifelong learners, including persons affected by the Digital Divide. At the same time, the regional representation among funding recipients will likely become more balanced.

The review of the OLT outcomes demonstrated that project success is based on consideration both of the product (technology) and the process (adult learning and change processes). The effectiveness of the technology is determined largely by the ease of access. Leading edge technologies are valuable only when these enhance, rather than diminish, the accessibility to learning content. Audio and video technologies, for instance, dramatically increase the effectiveness of learning materials that require the conveyance of physical interaction between a professional and client. Innovative technologies are also effective in increasing accessibility and ease of use for people with disabilities. On the other hand, advanced technologies may diminish access when these require greater infrastructure supports, for example broadband Internet service. Other factors that may reduce the effectiveness of the learning technologies are the skill level of the learners, the navigability of the site and the accessibility of the software.

Attention to process is fundamental to successful OLT projects. The advantage of "anytime anywhere" distance learning must be balanced with measures to counter the feeling of isolation among learners. Successful projects highlighted the importance of offering a variety of technical and learning supports to the individual learner, as well as opportunities for peer interaction. Along with interaction, projects highlighted several other important conditions for successful adult learning: a manageable course load, stimulating learning environment and content, including with practical application of knowledge, learner-centred class structure, feedback to learners, and workplace recognition of course responsibilities and knowledge acquired.

Successful projects and research indicate that the introduction of new technologies into a workplace or a community should be considered as a "change process." Efforts should be made to involve the learners from the start, to acknowledge their efforts, to encourage and provide feedback and, ultimately, to create a shared sense of purpose.

The creation and nurturing of partnerships is a key avenue for creating sustainability. Among the strategies listed were diversification of funding, including by creating business opportunities, the introduction of institutional policies and structures to support learning technologies, and the dissemination of the results to practitioners and policy-makers.

Dissemination of OLT project information could be strengthened. NPLT projects, which were for the most part led by academic and research institutes, used conferences and articles in journals to disseminate project results. Other successful means employed by OLT funding recipients were the use of personal and other organizations' websites, mailings and meetings with stakeholders and organizational members. Project promotion during the life of the project is directly linked to the dissemination of the results. The development of partnerships as a form of networking is one effective way to create interest and spread information about the project. Communication strategies were generally not included among project objectives and this may have affected the attention paid to this OLT priority. More effort has to be made to have research results reach the people who can affect change, both in practice and policy.

In conclusion, during the year (Dec 01 – Dec 02) covered by this outcomes review, OLT has had a significant impact on increasing access to learning technologies in Canada. It has achieved this by assisting Canadian institutions and organizations to experiment with new learning technologies – that are either “new to them” or, in some cases, still being field tested. By offering opportunities for skill development related to professional practice, training for isolated rural and homebound learners, and peer support through virtual community networks, OLT is contributing to the development of a Canadian learning society. Eventually, the sentiment offered below by a learner from an OLT funded project will be shared by all Canadians:

***“The term cyber space  
is not alien anymore.”***