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Report of the Expert Seminar on
**New Information
Technologies for
Continuing Education
and Training in
Strategic Sectors
of the Economy**

Edmonton, April 16th and 17th, 1999

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Canada

Report to the Expert Panel on Skills
on the
New Information Technologies
for Continuing Education and Training
in Strategic Sectors of the Economy

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Background of the Edmonton Seminar

CONTEXT: Seminar participants were aware of the Expert Panel's ongoing work to identify skills profiles and the labour market needs of the various strategic sectors. We were also aware of initiatives underway in other countries, including those in the U.K., the European Community, Australia, Singapore and the Asian Development Bank [listed on our website readings and discussion]. As well as providing context, this awareness created a pressing sense of the need for timely action in response. None of these initiatives would be wholly successful and even the successful parts could not be transported as-is into the Canadian setting. But the cumulative evidence demonstrated that other countries will become more productive through learning technology tools and Canada's competitiveness will further erode if we cannot accelerate learning in our strategic sectors.

ASSUMPTIONS: We generated the following set of assumptions underlying our work:

- Effective learning technology tools to enhance training are *part of* the solution to the continuing education needs in the strategic sector
- Ongoing improvements in infrastructure/bandwidth will have dramatic effects
- The economic value of skills/knowledge will increase relative to capital/resources
- Market forces will drive developments, e.g., supply will respond to demand signals
- Key resources - time, attention, funds - will continue to be constrained
- Disadvantaged communities, of interest and geography, will falter without support
- The rate of change in the impact of learning technology tools - and the knowledge required for their design, use and evaluation - will continue to accelerate.

What We Did Not Do: We did not attempt to customize these recommendations to the needs of particular sectors - there was a consensus that this would only be effective when owned and carried out by the sector communities. We did not attempt to evaluate specific options for actions by the various stakeholders - our *Model Initiatives* are intended to clarify the *Strategic Priorities*, demonstrate their feasibility, and illustrate the creative thinking required for success. We also gave only cursory consideration to the range of opportunities for public policy to further signal the importance of skills development with learning technology tools - from the removal of anachronisms like classroom hours as a measure of learning, to more effective tax policies for learning investments, and on to forward-looking initiatives such as registering individual learning plans as part of the National Graduate Register.

Acknowledgements: The dedicated support of the secretariat, particularly Gilles Jasmin and Heather Sterling, was essential to our success, as was the skilled facilitation by Tony Nash and the excellent local arrangements by Roger Palmer. Rapidly forging such a national coalition of expertise would not have been possible without the ongoing networking sponsored by groups such as HRDC's Office of Learning Technologies and the TeleLearning Network of Centres of Excellence supported by Industry Canada's granting councils.

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Summary

For new learning tools to contribute effectively to continuing education and training in Canada's strategic sectors, a set of complementary initiatives must be undertaken by government, associations, organizations and individuals. The key *Strategic Priorities* for leadership are an **exemplary demand** from a more knowledgeable market, a more **comprehensive supply** infrastructure, and support for **collaboration and localization** projects to leverage Canadian expertise. *Model Partnership Initiatives* illustrate how to move forward on these priorities, including recommendations to **highlight collaborative success** within sectors, **create exemplars** and pilot projects across sectors, and **develop a leadership role** for Canada. Action on these strategic projects must be initiated immediately in order for them to be fully underway by July 1 2000, with a two year horizon for accomplishment, review and further planning.

The Seminar Process

Mandate

The seminar was convened to address the following question on behalf of the Expert Panel on Skills:

How can new learning tools resulting from the new information technologies become more widely available and more effectively used in strategic sectors of the economy...particularly by highly qualified personnel maintaining or improving their knowledge-intensive skills.

Thirty seminar participants were invited from across the country for their knowledge, energy and commitment. While their current affiliations covered a range of strategic sectors, educational institutions, training suppliers and learning technology companies, these experts all took a broad view of their task and did not act as representatives for a designated community. This report summarizes the intense discussions during the seminar, as well as pre- and post-seminar conversations amongst the participants. The experts' commitment, knowledge, and willingness to listen and learn generated exemplary value in a remarkable short time. The process of interpreting and refining the discussion into this compressed report has preserved only a part of the seminar's energy.

Early in the Seminar process, the following two key insights emerged. They summarized our current achievements and guided the strategic priorities and model initiatives.

Co-ordinated, Comprehensive Actions are Required

There are numerous Canadian success stories to tell, including government programs such as SchoolNet and CANARIE, corporate applications of learning technology tools as documented by HRDC's Office of Learning Technologies, projects by sector associations such as the Sector Human Resource Councils and labour groups, and innovation programs from colleges and universities. We now need to find ways to bring these elements together on a sector-by-sector, workplace-by-workplace basis. Improving the infrastructure to access learning technology tools must be matched by increasing the quality and availability of content matched to learner needs. Encouragement for companies to apply new learning technology tools must be matched by the development of commitment and readiness in employees.

Learning Technology Can Become a Complementary Strategic Sector

A second striking theme expressed throughout was the need for a strong Canadian sector for the design, evaluation and marketing of learning technology tools. Plans to improve the utilization and effectiveness of new information and communication applications for learning can only succeed with a robust industry of providers. Like other strategic sectors of the economy, success in this sector requires human resource planning and co-ordination amongst academic, industry

and government partners. We began to treat this entity as a strategic 'mini-sector' in its own right, complementing the identified sectors and integral to their success in applying learning technology tools.

Strategic Priorities

Create Exemplary Demand from a Knowledgeable Market

Success in this area will be confirmed when Canadian organizations are the best in the world at choosing and utilizing learning technologies, and when individual Canadians are the best in the world at using learning technology tools for skills development. This knowledge, and the experience underlying it, will accordingly raise individual expectations for the availability of technology support for learning and increase the investment and return by Canadian organizations in learning technology. A demanding market will support a high quality supply sector, given complementary developments in supply side capability.

Develop a Comprehensive Infrastructure for Supply

Canada is a world leader in addressing the need for a comprehensive infrastructure for connectivity in the era of the information highway. These efforts must continue at a leadership level. But to take full advantage of this connectivity, and to meet the demand from a knowledgeable market, the capability of Canadian organizations to design and develop learning technology tools must be strengthened. This will require an accelerated maturity from learning technology developers and from content providers in industry and education. Success in this area will be confirmed when the availability of high quality learning technology tools in Canada is the best in the world and Canadian suppliers are recognized internationally for the value of the products and services they deliver.

Support Collaboration and Localization [and Leverage That Expertise]

The Canadian context presents particular challenges for learning technology tools in strategic sectors. Canada's jurisdictional, linguistic and geographic diversity contrasts sharply with some of our competitors, who will be able to develop national curricula for large markets. On the other hand, we can transform this challenge into an opportunity. The need to accommodate differences and to work across jurisdictional boundaries can provide unique expertise in partnering for collaborative development and in developing customizable components for local adaptation. The importance of situating knowledge in its communities of use is also a key theme in Canada's national research network for TeleLearning [TL-NCE]. Leveraging the needs of our market and the national expertise in technologies for knowledge-building communities to provide a competitive advantage for Canada forms our third strategic priority. Success in this area will be confirmed by the availability of locally-optimized learning technology tools in the strategic sectors and enhanced international opportunities for Canadian products and services in learning technology tools.

Model Partnership Initiatives & Lead Participants

To illustrate how these strategic priorities could be addressed, we generated a set of model initiatives and identified lead participants to assume responsibility for them. These illustrations should not be considered as isolated projects: a co-ordinated program of comprehensive initiatives is required. The stakeholders in each sector, including the complementary learning technology tools sector, need to select together the components of their program. We have outlined model partnership initiatives to illustrate how these sector programs could simultaneously address all the strategic priorities, with a potential lead partner identified to take responsibility for seeding the collaboration required.

Within Sectors: Highlight Collaborative Success

In each sector there are enthusiasts who have learned from other areas and applied new learning technology tools. The next step in the change process is to reach mainstream users, who benefit more from exemplars more specific to their interests. This calls for initiatives to highlight success stories and share case studies on a sector-by-sector basis.

Sponsor sector-specific partnership awards: Each sector needs to showcase its own success stories, of partnerships yielding *best value* for the investment by employees, employers, their respective associations, providers and academic institutions, and various levels of government. This is more than a quality award: it explicitly promotes partnerships across the interest groups, and would require an evaluation of the learning gains and the design decisions which produced them. This amplifies the impact of the success stories on their successors.

[Potential lead partner: Sector Human Resource Councils and industry associations]

Develop sector-specific training: Building on the success stories and partnership awards, specific training on the use, design and evaluation of learning technology tools needs to be made available. The targets for this training include employees at all levels in the sector, staff from sector and labour organizations, and sector advisors [e.g. IRAP]. The training should itself be exemplary in its use of learning technology tools, taking advantage of the strategic priority to enable customization and localization for sectors.

[Potential lead partner: OLT for customizable components, with Sector HR Councils]

In addition, training opportunities for the learning technology tools sector need to be integrated, so that designers, developers and evaluators can develop intimacy with the strategic sectors' requirements. For immediate impact this could include targeted training institutes for provider companies, and for medium-term impacts internships for students of learning technology design and industrial fellowships for their instructors.

[Potential lead partner: Industry Canada and sector associations like CAETO]

Adapt sector skills profiles & expectations: The most important change that must be fostered is the expectation for continuing education and training as critical to competitiveness, and a sense of shared responsibility for their success. One way to promote this cultural evolution is the inclusion of appropriate competencies in sector skills profiles, i.e. skills for learning with new learning technology tools. These should include an awareness of how learning takes place and translates into effective performance, and the different forms learning technology tools can take: active learning of concepts, practice fields, performance support systems and community knowledge-building. The skills profiles should also encourage the development of *learning leadership* roles in the workforce, to develop local expertise in knowledge-building.
[Potential lead partner: Sector Human Resource Councils and professional associations]

In parallel with a rising expectation for skills with learning technology tools, schools, colleges and universities need to develop these skills through more effective use of learning technology tools in their programs. This requires a targeted investment in infrastructure, personnel and applications. The emphasis will need to be different within different programs, i.e. for some institutions an emphasis on vocational qualification will be most effective as a spur, for others the generic value of learning meta-skills must be emphasized. The expectation can be reinforced by linking fulfillment of objectives in this area to other infrastructure investments, e.g. access to CA*Net III linked to institutional strategy for application of other learning technology tools.

[Potential lead partner: CMEC & Provincial Ministries of Education]

Across Sectors: Create Exemplars and Pilot Projects

To improve the utilization and effectiveness of learning technology tools in the strategic sectors, new models for collaboration and shared knowledge-building must be created. Innovation projects are needed to develop and demonstrate ways to advance the three strategic priorities. Once successful frameworks are established, they can be ported to the other sectors. Some of these projects might even be prototyped in other areas, if that is the most efficient way to generate the knowledge required for the strategic sectors.

Prototype Sector Knowledge Portals: There are encouraging initiatives underway to integrate various elements of continuing education and training, e.g., TechWorks for British Columbia technicians and technologists, CAW's recent initiative to explore CAP access points for the workplace. There are also initiatives to insure Canadian content and providers have access to network information channels, e.g. Industry Canada's prototypes for Community PassPort Internet portals. There is a powerful synergy in integrated access to knowledge for continuing education in the strategic sectors, with employees empowered through access to leading-edge resources for individual learning and community knowledge-building.

Prototype knowledge portals in pilot sectors would develop and demonstrate Canadian expertise in multi-level partnerships. These would bring together contributions from individual employees, academic institutions and training providers, employers and sector/labour organizations, to address skills gaps in the strategic sectors and enhance Canadian expertise in the learning technology tools sector.

[Potential lead partner: Industry Canada with exemplary employers, labour organizations, learning technology tools developers and researchers]

Develop Maps & Measures for Organizational Learning: employees' capabilities with learning technology tools will be recognized through the skills profiles and competencies, and achievement with particular learning systems will be showcased in the sector awards programs. Overall organizational commitment and expertise also needs to be recognized, for employers, academic institutions, training providers and sector councils. This could take the form of a self-rated Capability Maturity Model for the effective exploitation of learning technology, similar to the CMM developed for software engineering. The self-assessment provides a map for continuous improvement, and alerts potential partners and employees about the level of achievement in the organization. Other measures could follow the model of ISO-like quality standards, Quality Mark of the British Association for Open Learning.

[Potential lead partner: a consortium of leading organizations, such as TL-NCE members]

Seed Demonstration Projects for Customization & Local knowledge-building: Advances in models of learning have emphasized the importance of local empowerment and ownership of the learning process and content. This is enabled by learning technology tools which promote local adaptation of content and process, and provide for continuing enhancement of the learning process by the community of practice in the workplace. As outlined above, the Canadian context has special requirements which make aspects of this localization particularly vital, e.g. provincial jurisdictions in critical areas. This provides the opportunity for a sophisticated demand market which can drive international competitive advantage for the Canadian learning technology tools sector. Demonstrator projects could pioneer collaborative development methods which would then be applicable by Canadian providers in other countries.

[Potential lead partners: certification authorities, Ministries of Labour and Education].

Across Canada: Develop and Leverage Leadership

There are a number of initiatives best undertaken as pan-Canadian thrusts. This may require an exceptional level of co-operation across traditional jurisdictions.

Leverage Public Sector Institutions as Exemplars: One of the key roles which government and institutional partners can play is leading by example in the effective application of learning technology tools. This could be in the context of the cross-sector demonstrator projects outlined above. Or it could involve hosting development of new learning technology tools for generic skills like *leadership and management* or *learning to learn*, which could then be customized within the sectors. Or initiatives could focus on standards - for local customization, or for documenting learning designs and evaluations as part of the development process. Properly conceived, all of these could support the goals of creating an exemplary demand, strengthening supply and fostering partnerships.

[Potential lead partners: senior managers in procurement and training in public sector]

Support the learning technology sector as strategic: Many of the initiatives outlined above could be undertaken with the learning technology sector as target. For example, HRDC's Office of Learning Technology has the initial components of a knowledge portal for learning technology tools and some preliminary labour market and skills studies. Developing exemplary continuing education and training for this sector using its own technology, and demonstrating the strategic capability for local customization and community knowledge-building, form natural demonstration projects. Partnerships across provincial post-secondary systems will be necessary to reach critical mass for a high quality program to keep up-to-date in learning technology development.

[Potential lead partners: HRDC/OLT, with industry and academic partners]

Position Canada Internationally: the enabling expertise required for the Canadian learning technology context - in partnerships, collaborative development and local customization - can become a core capability in marketing Canadian products and services to the world. Initiatives here could include Canadian participation at a leadership level in international efforts with a specific focus on collaboration and mechanisms for local customization. Canada's success with SchoolNet shows how quickly a reputation for innovation can be recognized internationally - we need to extend that reputation into strategic sectors of the economy, including the development of learning technology tools.

[Potential lead partner: Industry Canada, External Affairs and Trade]

Timetable for Action

The Need for Immediate Action:

Action on these strategic projects needs to begin immediately in order to insure that all are well underway by July 1 2000, with a 2 year horizon for accomplishment, review and the planning of successor activities. While this timeframe is dictated by the actions already initiated by our economic competitors, there may be particular leverage from such a deadline. We were reminded of the significance of the multitude of individual and community projects energizing Canada's centennial year. Can we tap into a similar energy and national pride to emphasize the importance of skills and knowledge development as a strategic priority for the new millenium?

The Need for a Long-Term Commitment: Emphasizing the need for immediate action should not obscure the complementary need for long-term investments. For example, investing in teacher training, school system connectivity and exemplary learning technology application throughout the school years will be vital to our future competitiveness. In keeping with our call for a co-ordinated systemic approach, parallel initiatives for the long-term must accompany the immediate actions identified for the pressing needs of the strategic sectors. Long-term investments in a time of constrained resources will require a high-level, highly visible mobilization of the public will to apply technology in support of workforce development.

APPENDIX I: List of Participants

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Tom Carey, Seminar Chair and Director / Centre for Learning and Teaching through Technology, University of Waterloo

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Jim Bizzocchi, Standing Committee on Educational Technology, Victoria

Michael Bloom, Conference Board of Canada / Conference Board du Canada

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Paul Brennan, Association of Canadian Community Colleges

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