TeleEducation NB: An open, distributed, bilingual Province-wide distance education network

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TeleEducation NB is a province-wide bilingual (French- English) distance education network that serves the people of New Brunswick, Canada. It is an open distributed network that is accessible to all citizens for learning and to all organizations both public and private for delivering programs. In 1995 it has more than 100 sites available around the province. The network is a leading force in the governments economic development strategy to make the province a world leader in learning technologies.

The new technologies are developing at a rapid pace. In the Seychelles Islands of the Indian Ocean, the Australians are known for pulling up their boats alongside a swimming shark, leaning over and easing themselves onto the creature's back. The trick is: They DON'T Let go. No matter where or how fast the shark goes, they have to maintain their grip on the dorsal fin and hang on. Modern technology is like that. It is moving so rapidly and so erratically that all we can do is climb aboard and hang on.

The Canadian province of New Brunswick has maken a conscious decision to climb aboard. For a long time New Brunswickers like other citizens of the Maritime provinces of Canada have seen themselves as living on the periphery of the main economic activity which has traditionally been centered on the central provinces of Ontario and Quebec. However with the rapid development of the new knowledge economy which is based on bits of information rather than on physical products, New Brunswick finds itself in a fortunate position with access to NBTel's (the local Telco) advanced telecommunication infrastructure that reaches every town and village in the province. Physical location no longer matters when your product is information and you have the infrastructure. You can be located anywhere and still participate on equal terms with the traditional economic centres.

The new knowledge economy is developing globally without respect for national boundaries. Canadians learned a valuable lesson this past year when they tried to restrict the smuggling of cigarettes across their borders. If a country cannot stop the importation of cigarettes how can it possibly control the import of weightless, volume less bits of information. The recent Homulka/Teale trial gave us even more close hand experience in the futility of trying to restrict the flow of information. News of the trial was freely available across Canada to anyone who was on line.

The new economy is forcing major changes in the marketplace and in our lives. Those who fear for their jobs do so with reason. When we see major struggles among multi-billion dollar

companies for market positions, we have to conclude that something is up. New markets are up for grabs and multinationals and other companies that do not understand this will not survive. National fortunes are at stake. In the present climate, it would be irresponsible of us to pretend that information technology will not effect our educational institutions in as profound a manner as it is effecting the world at large. Personal careers are at risk.

In 1890s, North America faced a similar challenge. The economy was based very heavily on the horse. By 1905, this economy was being displaced by the automobile. Those in occupations involved with the horse had to change their orientations and retool. The present changes are far deeper. The new technology is to creativity and thought what the space shuttle is to walking.

However, in promoting the adjustment to the new economy, we must ensure that we make their required structural changes. Otherwise we will be in the position of pulling the new locomotive with horses. This is always more expensive and less productive than changing our structures to support the new technology.

The new economy is creating a scissors crisis. The number of blue collar jobs is dropping at an astonishing rate. At the same time, the demand for skilled technical people is rising at an even more rapid pace. A few years ago, it was believed that in the future there would only be two kinds of jobs: highly skilled and MacJobs. In fact, the fast-food outlets are even now experimenting with more automatic restaurants. Even the MacJobs will not be around in the next few years.

New Brunswick is a small province that can quickly adapt to the new economy. It is the only province or state in the country with a 100% digital fiber optic infrastructure. NBTel has completed their fiber ring around the province serving every community. In addition, the local cable company: Fundy Cable is working with the Community College to ensure high bandwidth applications are available to the home. Because it is a small province, New Brunswick can move quickly. Already applications are underway. Besides the provincial TeleEducation NB network, the NB government has implemented projects in teleradiology, a province-wide 911 service and electronic applications for moose hunting licenses. More recently, a provincial on line Netlearn NB program has been implemented to ensure that citizens will be able to easily access the information highway using a local window.

The NB government is promoting the province as an information technology testing ground. The advanced infrastructure is complemented by a bilingual (French - English) population. The urban - rural mix in the province parallels that of North America. It is small enough to be manageable and enjoys a remarkable degree of public - private cooperation.

The province is committed to an information highway infrastructure that is open and shared among all citizens. Province-wide access to the highway is assured through NBNet and other carriers at affordable prices. The public and private sectors in the province are united in their commitment to the rapid implementation of a high bandwidth network open to international standards. As part of the Canada-wide Beacon initiative, the Stentor alliance of telephone companies with NBTel is using New Brunswick as the first test bed for their high bandwidth implementations. (A $300 million initiative is now underway to make high bandwidth available to 60% of homes in the province by 1998.)

The provincial vision for economic development is focusing heavily on on advanced training technologies. There is an understanding in the province among the public and private sectors that learning and training are major economic activities in the new knowledge economy. It is expected that learning and training will become a dominant sector of the global economy in the next decade. Lifelong learning is not only essential for participation in the knowledge economy, it is the knowledge economy's most significant sector.

In order to participate, however there are major challenges. More of our people must learn more skills. We cannot be satisfied (as we have in the past) with having 20% of our population, predominantly our young people, in learning and training at any one time. We must now be training more than half of our people all the time. We have to do this with higher quality than we have in the past, and we must do it with less money.

Eric Hoffer noted "In times of great change, learners inherit the earth while the learned find themselves beautifully equipped to deal with a world that no longer exists. None of us grew up in this world. The Newtonian universe of linear order has been overturned. We now live in a chaotic universe. The skills that we grew up with are simply not good enough. We must retool and retrain.

Traditional education is in crisis. Not because it did not serve very well the exigencies of the old economy, but because it cannot adapt to the diverse demands of people trying to adapt to the knowledge economy. If most of us must be learning all the time, then our needs are different. We cannot deliver lifelong learning to the home, the workplace and to community centers by traditional means. Our spending on education is already higher than anywhere else in the world. We will not be able to double or triple our tax base in order to double and triple the numbers of people who are in training.

Our schools have been sheltered for too long from the new economy. It is significant that our students all live in a telecommunicated world that stops 10 feet outside of our schools. We expect our children to suspend their sense of reality when they cross the threshold of our schools, and pretend that the world of paper and blackboards is the real world. If someone were to have fallen asleep in the nineteenth century and awakened today, the only institution they would recognize would be our schools, where the biggest change has been the colour of the blackboard from black to green. Our paper mills, construction sites, offices, and banks have all changed.

But, is technologically enhanced distance education any good? Can it meet the challenge? In the last thirty years, there have been over 200 studies on the benefits of technologically enhanced education and distance education. The overwhelming majority show that it as good as or better than traditional education. (Russel, 1992) Can traditional education meet the challenge? If we believe that we must keep down costs while expanding access to more than 60% of the population all the time, then the answer is quite clearly: No, it cannot.

Developments in the information industries show us the trends for education. In the 1980s a number of separate industries were developing: publishing, electronics, television, computers, information services and telecommunications. Towards the year 2000, these industries are converging and becoming indistinguishable from each other. Cable companies are buying up

content companies, computer companies are entering telecommunications etc. This same trend is evident in education. A decade ago distance education, computer training and traditional education were all conducted separately. Towards the year 2000 they are converging. These trends are already evident in New Brunswick and in other jurisdictions. For example, Mount Allison University now delivers its first year Physics and Astronomy course using multimedia courseware. This is the same for students on campus and off campus. Dormitories in the campuses of NB universities are now wired. Students can upload assignments from their rooms. Students at a distance can also avail themselves of the same facilities from their homes.

The changes that have been thrust upon us in the last few years can be very threatening. Remember : If you are not confused, you don't understand the situation. In a very real sense this is true. If you have your future all planned out and know exactly where you are going, you have less of a grasp on reality than those who are confused.

TeleEducation NB is a province-wide network to help facilitate change in the new economy. Our institutions have been changing rapidly but taking different directions. TeleEducation's goal is to make people aware that we are all in the same boat, and that we must work together. However, we all feel like the character in Housman's poem "A Shropshire Lad"

> I a stranger and afraid
> In a world I never made.

TeleEducation NB is a program under the Canada-New Brunswick Cooperation Agreement on Entrepreneurship and Human Resource Development. The purpose of the program is to set up a province-wide distance education network open to all learning and training organizations. In order to accomplish this, the network is also responsible for training teachers in distance education, as well as assisting course developers in adapting courses for distance delivery. The network is also responsible for promoting access in the communities by supporting students and assisting them and the institutions. The network also serves as a provincial clearing house for information on distance education.

The mandate of the network is to provide bilingual (French- English) services, and promote equitable access in all regions. This must done cost-effectively while delivering technological training to the people. Recognizing that New Brunswick has an advanced infrastructure with a well -educated population, the network strives to achieve world leadership in distance learning and in the uses of technology in education.

The staff consists of a director a learning design specialist, a learning support coordinator, a technological coordinator and support staff. In addition a team of 18 part-time site facilitators provide support to learners in all regions of the province.

The Cooperation agreement is providing $10.5 million over five years from 1992-1997. Two-thirds of this money comes from the federal government, and one-third is from the province. The network has been allocated $6.1 million and $4.4 million has been reserved for program development.

Over 60 TeleEducation NB sites are now functioning in over thirty-two different communities around the province. These sites are in community centers, hospitals, health clinics,

campuses. schools, government offices and private businesses. The network pays no rents for these sites which are donated by the participating communities. All students as well as all education and training institutions have free access to the sites for courses. Sites are equipped with basic equipment, much of which is supplied by the community. All sites are based on a 486 PC with a printer and modem. In addition sites also provide access to a fax machine, a photocopier, a TV a VCR, an audio player and a computer writing tablet. They all have an Internet connection through the provincial NBNet. Most of the sites that are used by course developers also have a scanner. Sites involved in multimedia courses requiring a MAC computer have them installed.

The base technology chosen is SMART2000* computer conferencing software that allows for screen and software sharing at multiple locations. Using separate lines for audio and data, each site communicates to multiple sites through the data and audio bridges. The network also uses the TCP/IP protocol for SMART connections over the Internet. The network does not believe in any one technology. On the contrary, it supports the development of many different delivery media . However, it has chosen audio graphics using SMART because it is computer-based and very simple to operate. The system can be used as an electronic blackboard, a slide projector or as an overhead projector. An added feature is its facility for software sharing. Already AutoCAD courses have been delivered by the Community College in Moncton using this feature. The system is also reliable, available and cost-effective. For less than $500.00 we can set a site up anywhere. The system can be installed on computers that at non-course times can be used for other purposes.

Because the costs of establishing a site are so cheap, any community can participate. The network helps communities that cannot afford the basic equipment. It goes in partnership with others providing parts of the equipment and software. Another feature of the network is that the infrastructure allows any site to be not only a receive site, but also a delivering site. Typically students can be on site with the instructor while course are delivered to remote sites. Teachers often travel to different sites and deliver from there.

The Program Development Fund of $4.4 million is used not only to help organizations to adapt courses for distance delivery, but also to help promote the development of a local multimedia courseware industry. These funds are available up to $75 000 per project. Organizations must pay at least 50% of the expenses for any project. Partnerships between public sector content providers and private sector software companies are strongly encouraged. More than 50 projects have been approved to date representing an investment of over $4 000 000. More than 35% of funding has gone to projects that involved partnerships with small private sector companies. The provincial government is using the TeleEducation initiative to help incubate an indigenous software industry.

The TeleEducation NB network has only been in operation for 18 months, but already they can claim a number of achievements. Among them is the first AutoCAD course delivered using softwaring in a multi-point environment (NBCC Moncton to 5 sites). Multimedia distance education courses in first year University Physics and Astronomy (Mount Allison U.) have been delivered. In addition, the network implemented the first distance education network gopher and world Wide Web servers.

A new Netlearn NB initiative has been approved where the network will be opening up province-wide access to provincial libraries and to CD-ROM stackers containing bibliographic databases. In addition, Netlearn will serve as an on-line information centre for all the schools and individuals who are coming on line. All NB schools and libraries will have Internet access by June 1995.

Historically, small provinces and states like New Brunswick have been bypassed by the great metropolitan areas in economic development. However, the times are changing and the very features of small out of the way regions that were held against them in the past can now be turned into assets. New Brunswick understands this as it uses its distance education initiative to not only educate the people, but also to promote the economic development of the region. Using its small size, talented people, innovative businesses and advanced infrastructure, New Brunswick is positioning itself to be an active participant on the world stage in the new knowledge economy..

Reference

Russel, T. L. (1992). The "No Significant Difference" Phenomenon as reported in Research Reports, Summaries, and Papers". Unpublished Manuscript.

SMART 2000 is the trademark of SMART Technologies of Calgary, Alberta. They can reached at (403) 245-0333 or through Internet: davidmar@cuug.ab.ca.

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