

From Railcars to Virtual Schooling: A History of Distance Education and E-Learning in Newfoundland and Labrador

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Introduction

The area of Newfoundland and Labrador is 155,000 square miles while the population is only 505,000 (Barbour & Mulcahy, 2009). Half of the population lives in the capital and the other half lives in small rural communities many of which are coastal and remote. Providing K-12 education in such a large area with isolated and remote communities has been a challenge.

Distance education was introduced under necessity to cope with the geographical and demographical challenges of the province, while, in the United States distance learning for elementary and secondary students represented a solution to many other problems such as crowded schools, a shortage of secondary courses for remedial and the challenges to accommodate the students who need flexible schedules (Cavanaugh & Clark, 2007).

This paper outlines the development of distance education and e-learning in Newfoundland and Labrador. Primarily, it focuses on how Distance Education evolved in a geographically large but sparsely populated province, why this approach to education developed and the challenges and historical events that led to the development of e-learning and distance education.

Early efforts in distance education: A school on wheels

The concept of distance education is not new in Newfoundland and Labrador (Crocker, 2007). Riggs (1987, p.1) identified two types of delivery of education for isolated communities in the province. First, the Department of Education, the Newfoundland Railway and the Anglo-Newfoundland Development Company launched a plan to open a school on a railcar. The main purpose of the "School on Wheels" was to teach children who lived in small, remote communities without schools but close to railway tracks. The Department of Education provided a teacher, curriculum materials and equipment. The Anglo Newfoundland Development Company donated a railcar (Noseworthy, 1997).

The Department of Education established the Correspondence Division in 1938 (Riggs, 1987, p.1). Noseworthy (1997) reported that the School on Wheels program was attached to the Correspondence Branch to operate correspondence courses instead of a regular curriculum (p.115). The railcar was used for educational purposes from 1936 to 1942. Meanwhile, some schools were opened in rural areas which led to low enrolment in the railcar program. Eventually, the railcar service was discontinued.

Report of the Small Schools' Study Project

The second effort made to provide distance education in the province was in 1956 when the Department of Education introduced correspondence courses in 50 small schools at grade 9, 10 and 11 (Riggs, 1987, p.2). A committee was established under the direction of Frank Riggs in 1987. Riggs (1987) identified various issues in small rural schools such as limited curriculum, insufficient staff, inadequate guidance and lack of instructional material. Besides these issues, he also identified the most critical problem which was teacher recruitment and retention in remote communities. Riggs submitted his report, "Report of the Small Schools Study Project" with recommendations on many issues. One of these issues was distance education:

3.4 That by direct classroom teaching or by distance education, all senior high schools should have the ability to offer all courses which are prerequisite to entry into post-secondary institutions and the ability to accommodate particular course requirements of small numbers of students.

3.5 That measures be taken to ensure that a course in high school chemistry level 2 [Grade 12] and a course in high school physics level 2 (Grade 12) are available to small high schools by September 1987. Consideration should be given to delivery by computers, audio-video tapes or by other means of distance education.

3.6 That greater use of technology be made in program delivery in small schools; especially in small high schools.

3.7 That a Distance Education School be established and a principal and teachers be employed to assume responsibility for the development and administration of distance education courses.

Telemedicine and Educational Technology Resources Agency (TETRA)

In response to the Riggs' report, the Department of Education planned to develop a "Distance Learning Model" for remote schools (Boone, 2010). For this purpose, Telemedicine and Educational Technology Resources Agency (TETRA) was used. TETRA was established in 1977 for research development programs and service delivery in the fields of education and health in Newfoundland and Labrador. TETRA relied on an audiographics' system to conduct teleconferences (Barbour, 2007). It was decided to use the TETRA network to deliver courses to senior high school students in small rural communities (Johnson, 2011).

In 1987, "the Small Rural Schools Distance Learning Project" was established by the Department of Education (Boone, 2010). In the first stage, distance courses in advanced Mathematics and Calculus Readiness were designed for senior high

school students who wanted to attend post secondary institutes (Barbour, 2011). The courses were successfully delivered through the TETRA network. Later, in 1988, the TETRA network with the collaboration of NewTel Communications Inc. was expanded for distance education to 13 rural communities. In the first cohort, 36 students from communities across Newfoundland and Labrador studied Advanced Mathematics 1201. The delivery of courses through the TETRA to rural students was an important step in distance education in the province.

In order to meet the increasing demands of distance education, eight regional networks were created by the TETRA (Boone, 2010). Besides the regional networks, there were also three networks for schools. These school district networks were established for schools by the Telemedicine Centre at the request of school districts. The main purpose of the Small Rural Schools Distance Learning Project, which was established in 1987 by the Department of Education in the area of Advanced Mathematics, was to provide opportunities to rural students to enrol in courses such as math and science, which were prerequisites for enrolling in post-secondary institutions. There were many issues such as high cost, scheduling and administrative constraints, which had significant impact on the delivery of courses through distance education to senior high school students in small rural schools.

East West Project

In 1996, the East-West Project was launched to produce a course-based information technology curriculum for high school learners by the governments of British Columbia, Newfoundland and Labrador, New Brunswick and Alberta (Barbour, 2005; Boone, 2010). Each province produced a module dealing with predefined topics such as web publishing, graphic design, telecommunication networks, telecommunications and computer applications. Later, individual school districts started delivering distance courses.

Vista School District

In 1997/98, Wilbert Boone submitted a report, "A Partnership Model for Distance Education in Newfoundland and Labrador" to the Program Development Division of the Department of Education. He recommended a partnership model for the administration and coordination of distance education in the province. As a result, the Telemedicine Centre regionalized the TETRA Network to parallel the new school district's boundaries. These networked school districts, which were nine at that time, led the Department of Education to implement a partnership model for distance education in Newfoundland and Labrador. These school district networks enabled the Department of Education and school district offices to carry out a partnership model collaboratively for the administration and coordination of distance learning in the province (Boone, 2010).

Networking: The Lighthouse School Project and the use of STEM~Net

According to Boone (2010), networking of primary, elementary and secondary schools is another important event in the history of distance education in Newfoundland and Labrador. Stevens (2007) noted that, in 1990, the Department of Education launched the Lighthouse School Project (computer networks in schools). Thirty-one lighthouse schools were established all over the province. Most of the schools were in larger urban centres. These lighthouse schools offered senior high school programs. The lighthouse schools were provided computer hardware and software to establish computer labs that included a local area network. As a result, all lighthouse schools established a local area network using digital technologies.

Another project the “Striving Towards Excellence in Learning by Linking Activities and Resources (STELLAR)”, was launched in 1990. In this project, a fibre broadband cable was used for networking which allowed school networks to transmit videos, sound and graphics in a full multimedia, networking environment (Boone, 2010).

Another important event in the history of distance education was the use of STEM~Net in the province. In 1993, STEM~Net: Educational Networking in Newfoundland and Labrador was launched as a computer network for Science, Technology Education and Mathematics teachers. Later its circle was enhanced to all primary, elementary, secondary and college instructors and even small rural school teachers. Overall, more than five thousand teachers were connected through this network (Stevens, 2007). The main intention of STEM~Net was to integrate technology into the curriculum of schools at all levels. STEM~Net was also used to establish SchoolNet in early stages. SchoolNet was established to connect all schools to the Information Highway throughout Canada. Newfoundland and Labrador was the first province in Canada to have all its schools connected to the Information Highway. STEM~Net was also used to provide communication and connectivity services of school (Boone, 2010).

Delivery of advanced placement courses in rural communities

In 1997/98, the Centre for TeleLearning and Rural Education with the partnership of Vista School District and STEM~Net designed and developed the content of Advanced Placement (AP) courses in Mathematics, Physics, Chemistry and Biology for delivery on-line to students in rural areas (Boone, 2010). In 1998, the Centre for TeleLearning and Rural Education with the help of Vista School District and STEM~Net established Vista School District Digital Intranet. During the 1998-99 school year, Stevens (2007) reported that, for the first time, 55 students were enrolled from eight schools within the vista school district. The students were enrolled in A) Biology, Chemistry, Physics and Mathematics. AP courses are a well established feature of senior secondary education in Canada and the USA. Many north-American universities provided credit in the first year of

the program depending on the standard of pass obtained. The main purpose of Vista School District Digital Intranet was to provide extended educational opportunities to students in remote areas.

The Center for TeleLearning and Rural Education

In the report “Our Children, Our Future”, it was recommended that the Faculty of Education establish a centre to address the problems of small schools. As a result, the Center for TeleLearning and Rural Education was established and Dr. Ken Stevens was appointed the chair of the centre in 1997. The centre was established to conduct research and to promote tele-learning in teacher education in remote schools in the province. Many research projects were conducted, facilitated or coordinated by the Centre for TeleLearning and Rural Education (Boone, 2010).

The Virtual Teacher Centre

In 2001, the Virtual Teacher Centre was established by the Newfoundland and Labrador Teachers' Association (NLTA) to enhance professional development of elementary, primary and secondary school teachers through online learning in the province Boone (2010). In 2003, funding was provided to NLTA by federal and provincial governments to launch a pilot project to deliver online professional courses for rural teachers and community leaders to enhance their professional development through information and communication technologies. Eventually, a website was prepared to give access to learning materials. Teachers could access these resources from anywhere and at any time.

The Centre for Distance Learning and Innovation (CDLI)

In 1999, the Government of Newfoundland and Labrador appointed a Ministerial Panel on educational delivery in the classroom. The Sparks-Williams Ministerial Panel recommended that the Department of Education establish a Centre for Distance Learning and Innovation in the province. As a result, in December 2000 the provincial Department of Education established the Centre for Distance Learning and Innovation (CDLI). The main purpose of CDLI was to increase learning opportunities and career options for students especially in rural areas. CDLI delivers online courses (virtual schooling) to senior high school students in rural areas as well as in urban areas throughout the province. The vision is outlined on the CDLI website as follows:

1. Provide access to educational opportunities for students, teachers, and other adult learners in both rural and urban communities in a manner that renders distance transparent;
2. eliminate geographical and demographical barriers as obstacles to broad, quality educational programs and services;

3. develop a culture of e-learning in our schools which is considered to be an integral part of school life for all teachers and students.

The target students for CDLI are those from small and remote communities (Boone, 2010). In its first year, CDLI offered 10 courses in Advanced Mathematics, Physics, Chemistry and French to 200 senior high school students from 76 schools through the TETRA network (Barbour, 2007). In 2002/03, eighteen senior high school courses were offered to 74 small rural schools in the province. Some communities in the province did not have access to broadband at that time. In 2010, CDLI offered 38 courses to 103 schools mainly in rural and remote communities in Newfoundland and Labrador. Barbour (2011) explained that CDLI is the only institution that provides online courses to high school students in the province. It is operated within the Primary, Elementary and Secondary Branch of the Department of Education.

Funding is provided by the provincial government. Currently, CDLI is offering 40 courses in Art, Career Education, English Language, French, Mathematic, Advanced Mathematics, Science, Music, Social Studies and Technology Education & Skilled Trade. Approximately one thousand students from 112 schools, mainly from remote communities, are taking online courses. Fifty seven staff including 35 e-teachers is working with CDLI. All 34 full-time and one part-time e-teachers teach from different places throughout the province. There are four management points in each of the following centres St. John's, Gander, Corner Brook and Stephenville. There are more than 1350 computer workstations and more than 150 videoconferencing units. The following learning tools are being used by CDLI

1. Desire 2 Learn (Learning Management System)
2. Elluminate Live (Web Conferencing Tool)
3. CDLI Learning Portal/Website
4. Polycom Videoconferencing Technology

Videoconferencing is used for multiple purposes such as one-to-one chat, to deliver instructions for skills' trade courses, to teach piano and art. The main server is at Memorial University. Elluminate Live is another important tool used by CDLI. Barbour (2007) reported that, using Elluminate Live software, students can very easily interact with their teachers. Moreover, using instant messaging, application sharing, interactive whiteboard, and interactive quizzes, teachers deliver instruction as in a conventional classroom. Students and e-teachers can communicate in real time. On site, students are supported and supervised by a mediating teacher (m-teacher) or mediating team (m-team). One guidance counsellor is working full time with CDLI to support and help the online learners. CDLI is provides a wide range of subjects to rural and remote school students. As a result, the enrolment for senior high school courses is growing (Crocker, 2007).

The Killick Centre for e-learning research

According to Boone (2010), the Killick Centre is a community university research alliance (CURA) which was established in 2006 to carry out research, provide training and generation of new knowledge in the field of e-learning at elementary and secondary school levels particularly in rural areas. Barbour (2011) noted that the CURA has three main goals e.g. capacity building, increasing the amount of high quality research in E-learning and more effective knowledge exchange in e-learning. The main focus was on e-learning at the K-12 level. The alliance consisted of 15 co-investigators, 10 community collaborators and 12 community partner organizations.

Conclusion

The purpose of this paper has been to outline the development of Distance Education and e-learning in Newfoundland and Labrador. The scale of schooling and the continuing decline in student enrolment necessitated this initiative by the government of the province. There is some evidence of the use of distance education in the province before 1949 when a railcar was used to provide schooling. The first milestone was in 1987 when, upon the recommendation of Riggs' report, distance senior high school courses were offered to students in remote and isolated communities. Then, the involvement of TETRA, networking of school districts, networking of schools, and networking of teachers supported e-learning to flourish in the province. Some other projects were also instrumental in the history of virtual learning in Newfoundland and Labrador. Some of them are Lighthouse School Project, Stem Net, Vista School District Digital Intranet (VDI), The Virtual Teacher Centre, The Killick Centre for E-Learning Research and The Centre for TeleLearning and Rural Education. The most important event is the establishment of CDLI. Through CDLI a large range of senior high school courses are offered to more than one thousand students in 112 schools throughout the province. Thus, e-learning has opened new vistas for students in remote communities to have access of quality education in the province.

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