THE DEVELOPMENT OF VIRTUAL SCHOOLING IN NEWFOUNDLAND AND LABRADOR

Nadeem SAQLAIN
Faculty of Education
Memorial University of Newfoundland, Canada.

ABSTRACT

K-12 online distance education is growing rapidly and many organizations focus on virtual schooling in Canada. The centre for Distance Learning and Innovation (CDLI) was established in 2000 in Newfoundland and Labrador and has been offering numerous opportunities to rural high school students through online distance education. In this paper, the authors have outlined the historical development of distance education in Newfoundland and Labrador. The concept of distance education in NL is not a new phenomenon. It can be traced back in 1930s. Since then, several efforts have been made to enhance equality of educational opportunities to rural students. Despite the tremendous impact that the CDLI has had on distance education few related research documents or associated scholarly articles exist. At the end of the article some recommendations are made to improve virtual schooling in the province.

Key Words: **Virtual schooling, rural education, small schools, CDLI.**

INTRODUCTION

The rapid expansion of the role of personal computing in everyday lives, along with increasingly reliable networking technologies as well as the explosive rise of the Internet led to an associated rise in Virtual Schooling. Virtual schooling or Online Distance Education (ODE) at the K-12 level became feasible on a large scale in the 1990s. Since then, its growth has increased very quickly, and still continues to increase (de la Varre, Keane, & Irvin, 2011). Most states in the US and many jurisdictions in the United Kingdom, Australia, Canada and New Zealand have their own virtual schools (Barbour & Reeves, 2009; Compton, Davis, & Mackey, 2009; Zucker & Kozma, 2003). Rice (2012) reports the increase in K-12 online distance education in the United States context. She notes that in the US, the annual growth of virtual schooling is 30%. The enrolment in online courses has reached 4 million in 2011 an increase from 50,000 in 2000. Forty five states out of fifty have their own virtual schools. In the same vein, the use of virtual schooling in Canada is growing. According to Barbour (2013), there were almost 25,000 K-12 students enrolled in online distance courses in 1999/00 in Canada, while the number of enrolments has reached 284,963 in 2012/13. This rapid growth in virtual schooling occurs because of various factors such as increase in access to the internet, a decrease in the price of hardware, a growing variety of learners with different educational needs, and the appeal of cost effectiveness distance education (Johnson, 2011). Learners take online courses because of flexibility, physical disability, and limited curriculum at their own schools, rural schools, underserved, disciplinary problems, and a desire for home schooling (Roblyer, 2005).

There are 251 programs which offer K-12 online distance education in Canada (Barbour, 2013). Some provinces have one program while others have more than one depending on the students' enrolment and needs for distance courses. Due to the rapid proliferation of digital technologies and their use in education especially in virtual schooling, it is significant to know how these programs are operating. There is a lack of literature which indicates the characteristics of such programs. In this paper, we will shed light on the program offered by the Centre for Distance Learning and Innovation (CDLI). The purpose of this paper is to optimise readers' understanding towards the historical development of virtual schooling in Newfoundland and Labrador. The paper will encompass the initial issues, delivery of courses, content development in the CDLI domain. At the end, we will make some suggestions to optimise the benefit of virtual schooling in NL.

CDLI: A CASE OF VIRTUAL SCHOOLING

Rural Nature of the Province

One of the major issues of the province is its rural nature. The total area of the province is approximately 400,000 km² which is approximately twice the size of Great Britain. More than 50% of the population lives in the capital or in its suburbs, while the remainder lives in many small remote communities. These rural communities are not close to each other, some of the communities are accessible only by plane or by boat. Providing K-12 education in such sparsely populated communities is not an easy task. This is a perennial challenge which can be seen through statistical report of the Department of Education:

> ***"The people in Newfoundland dwell in approximately thirteen hundred settlements scattered mainly over s coastline of some six thousand miles, and the problem of supplying educational facilities to the people of these settlements is a very difficult one" (Burke, 1935).***

Decline in Population

Many rural communities around the globe are facing many challenges and the rural communities in NL are no exception. The challenges that rural communities face include, but are not limited to the decline in forestry, agriculture, fishing and mining industries. The fall in resource-based industries have significant impact on the decline in population. In the NL context, the demographic change occurred due to two main factors; one is change in fertility and the second out-migration. It is estimated that a woman would need to have an average of 2.1 children for a population to reach stable replacement levels. In Newfoundland and Labrador, the fertility rate is 1.45 per woman, which is the second lowest fertility rate in Canada. The reason for this low fertility rate is that during the decades of 1960s and 1970s the female baby boomers joined post secondary education institutes in order to gain jobs (Mulcahy, 2007). The decline in the fishing industry resulted low population in rural communities. Many people out-migrated in search of jobs. Some moved to other provinces while others moved to the urban centres of the province. As a result, the enrolment in schools dramatically dropped. In the mid 1970s, there were around 160, 000 school-aged students while there are less than 70,000 in 2013/14. Decline in school enrolment resulted in job cuts. In the 1960s, families with eight and even ten children were common. Now, because of outmigration, the situation is reversed. The majority of school-aged children live in the large centers. The rural schools in small and isolated communities often have very small number of students. Many small schools were consolidated during the last fifty years. However, complete consolidation of rural schools was not possible due to the large distance among communities. The recruitment and retention of qualified teachers for small schools is another critical issue. Therefore, the provision of a comprehensive curriculum at the rural high schools is a great challenge.

Early Efforts of Distance Education

Considering geographical and demographical challenges of the province, several efforts were made by the department of education in the past to provide equality of educational opportunities to students in rural communities through distance education such as correspondence courses and radio.

The School on Wheels 1936-1942

It was difficult for small communities to support a school. Therefore, a railcar was used to teach the children in small communities which were close to railway track. The program was named "The School on Wheels". The Department of Education, the Newfoundland Railway and the Anglo-Newfoundland Company jointly launched the project (Noseworthy, 1997). The railcar served the communities from 1936 to 1942. Then, the service was discontinued because of low enrolment in the program.

The Correspondence Division 1938-1942

The Department of Education established a correspondence division and attached it with the railcar program. Approximately one hundred children from remote communities were served through correspondence courses in the first year of the program (Department of Education, 1938). With the discontinuation of the School on Wheel program, the correspondence courses program was also came to an end.

Radio Education 1950s

In 1950, Audio-Visual Division was made responsible for the promotion of school broadcast. During the year, Newfoundland first time actively participated in the planning and production of the Atlantic School Broad Casts (Department of Education, 1950). The aim of the broadcast was to supplement the curricular program of studies in music, physical fitness, oral French, English, health, social studies, science, and vocational guidance. The provincial government took responsibility to provide financial aid to school boards for purchasing the radio-phonographs. Thirty five school boards were subsidized in the purchase of thirty nine radio-phonographs which was designed for educational purposes. Both types of radio-phonographs were available; electrically operated and battery operated. During the following years, ninety two schools applied for radio licensing. In addition to radio-phonographs, 10, 544 documentary films and film strips were circulated free of charge to schools, colleges and other organizations. In 1954, with the collaboration of CBC, Radio was directly used to assist teachers and students on the Newfoundland course of study.

Correspondence Courses

To cope with the issue of shortage of teachers in small schools, a committee lead by the Director of Audio-Visual Education recommended the use of correspondences courses with radio integration (Department of Education, 1957). The correspondence courses program was initiated in 1958. The correspondence courses program served rural students from various communities. Due to the introduction of scholarships and bursaries, the enrolment in correspondence courses program decreased. As a result, the correspondence courses program had to discontinue.

Small Schools Study Project

In 1964, the provincial government created a Royal Commission on Education and Youth. The commission was established to study all aspects of education, and to make recommendations to improve the educational standard in the province. Dr. Philip Warren from Memorial University was appointed as a head of the commission. The commission thoroughly examined the educational system and presented its report in two volumes. The first volume was presented in January 1967 and the second in October 1967. The commission attributed low achievements of students due to various factors one of them was a large number of small

schools in rural communities. Besides other recommendations, the commission recommended a large scale of consolidation of school boards and small schools (Warren, 1967). As a result, many small schools were either eliminated or consolidated without the consideration of unique characteristics of small communities.

In 1986, Dr. Frank Riggs was appointed by the provincial Department of Education to conduct a study on small schools in the province. The report *"Report of the SMALL SCHOOLS STUDY PROJECT"* was published in 1987. Riggs (1987) recommended distance education as a solution to the issue of the provision of comprehensive curriculum. The recommendations were:
That by direct classroom teaching or by distance education, all senior hi 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.That greater use of technology be made in program delivery in small schools; especially in small high schools

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. As a result, in 1988-89, the grade ten Advanced Mathematics course was offered in 13 pilot schools through distance education using Telemedicine Education and Technology Resource Agency (TETRA) network, located at the Health Sciences (Johnson, 2011). This was the first step towards e-learning at the K-12 level in the province. The TETRA network used an analog, rather than a digital network; a combination of audio graphic technology and tele-writers (Barbour, 2007). A telephone-based conferencing system was used to join the classrooms. All the students were taught synchronously. The project became very popular. As a result, more courses were offered through TETRA. Similarly, many other schools showed their interest in the project and became a part of it.

In 1989 and 1990, grade eleven and grade twelve advanced mathematics were added respectively. In 1991 and 1992, grade eleven and grade twelve physics and core French were added respectively. In 1995 and 1996, grade eleven and grade twelve chemistry were added respectively.

Not only did the course offerings broaden, but also the number of schools reached by the program expanded. By 1996, over eighty small rural schools participated in the program. The students participated from all rural parts of the province. The instructors were also located throughout the province. The provincial examination were showing that achievement and completion rates on par with face to face classes.

The Lighthouse Project

In 1990, Newfoundland and Labrador started its first computer networking project "The Lighthouse Project". The Lighthouse Project equipped 31 high schools with a networked computer lab (Boone, 2010). Teachers on-site were trained to work with it. One of the major challenges of the project was the unavailability of ICT specialists. The network was designed, developed and implemented by the teachers, under the guidance of Frank Shapleigh, a high school teacher who was seconded to lead and implement the project. The technologies were accessible to students as well.

STEM ~Net Project

In 1993, the Canadian federal government and Memorial University launched the STEM ~Net Project in the province. The main purpose of the project was to bring Internet based educational opportunities to Science, Technology and Mathematics teachers and students in the province. With the advancement in internet and computer technology, the project circle

extended to other subjects. Three main STEM ~Net servers were obtained; two of them were used as the main system servers at Memorial University while the third portable server was used for training purposes. The STEM ~Net Project had its own specific website, dedicated to educational networking activities. With the efforts of the STEM ~Net Project, all the schools in the province were connected to the Internet. Thus, NL became the first Canadian province to have all its schools online.

East West Project

In 1996, the East-West joint project was launched to produce course based information technology curriculum to 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.

The Vista Project

In 1998, with the funding from Industry Canada and the collaboration of STEM ~Net, the Vista School District and Faculty of Education, four Advanced Placement web-based courses (Physics, Chemistry, Biology and Mathematics) were developed and offered to rural students within the Vista School district. Eight sites were electronically linked to each other within the Vista school district (Stevens, 2006). The delivery system used a combination of WebCT, NetMeeting (with a MeetingPoint bridge for enabling multi-site classrooms) and KnowledgeForum for delivery. In the following year, a grade ten Art Technology courses was also developed and offered through the same media technologies as were used for the Vista project. During the year, two other districts were also added to the project. The Learning Management System (LMS) which was used in the project had student email, reasonable powerful online testing tools, a drop box for submission of work, a discussion forum and a grade book. The project was a great success and paved the way for the virtual schooling in the province.

Center for Distance Learning and Innovation

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 (Sparks & Williams, 2000). As a result, in December 2000 the Centre for Distance Learning and Innovation (CDLI) was established by the Department of Education. The main purpose of the CDLI was to increase learning opportunities and career options for students especially in rural areas, although it had two other mandates, namely the Integration of Communication and Learning Technologies (ICLT), as well as online teacher professional development, which was accomplished at the time through a partnership with the Newfoundland

Labrador Teacher's association called the Virtual Teacher Centre (VTC).

In the beginning, it was decided to pilot ten new Internet-based courses, one each in the ten English districts that existed at the time. Internet connectivity was upgraded in some parts where it was possible. In other places, many satellite services were located and purchased. So, after the successful pilot year, the CDLI implemented Internet-based courses to school year 2002-03. In that school year, 17 online courses were offered to high school students in rural areas. The CDLI was created as a division of the Department of Education. The e-teachers were hired by the CDLI through the cooperation of district schools in 2002. The teachers were also trained to use LMS (WebCT) and the synchronous tool (vClass). In the pilot project, the concept of a mTeacher (mediating teacher) was introduced. The mTeacher being one of the school's teachers located onsite would help out with the implementation.

Later, mTeam (mediating team) was introduced. An mTeam had four components; administration, coaching, peer support, and technical. The administration such as registration and selection of the students, and the provision of adequate space for e-learners, was done by the principal. Coaching was done by the e-teachers with the help of an on-site facilitator. Senior fellow students would help their junior peers in basic training. Technical problems were solved by the district technician with the help of an on-site facilitator. Almost all the above mentioned mTeams members are working with the same responsibilities.

Currently, the CDLI delivers over 40 online courses approximately 1000 high school students. The courses through the CDLI are offered synchronously and asynchronously. The CDLI is the only organization providing K-12 online distance education in the province. In the CDLI modal, the principal or the designate at school levels selects and registers students for online courses. The principal also makes sure that students have adequate supervision while they are in an online class. The M-Team (On-site support team consisting of administration, teachers, district technology support personnel as well as students) supervises and liaisons with the e-teacher. Senior students help their fellows in basic training and coaching. Technical issues are solved by the district technicians in partnership with the CDLI.

More than a decade has passed since the inception of the CDLI, however, there is a lack of systematic effective research on the CDLI. Few studies were published on the development of distance education (Barbour, 2005; Barbour, 2008; Boone, 2010; Mulcahy, 2007; & Press, Galway & Collins, 2003; Saqlain, 2013),the integration of technology in rural schools (Sheppard, Boons & Stevens, 2001), the effectiveness of distance education (Crocker, 2007), the impact of high school web based education on rural students' achievement and persistence (Dodd, Kirby, Seifert & Sharp, 2009), perceptions of distance education (Johnson, 2011), the role of on-site facilitators (Barbour & Mulcahy, 2009), the need of change in teaching (Stevens, 2006; Stevens; 2007) , the perspectives of high school distance education teachers on synchronous and asynchronous teaching (Murphy, Rodriguez-Manazanares & Barbour, 2011), and the use of virtual teaching (Saqlain, 2014). However, there is a lack of literature which indicates in depth the characteristics of the CDLI.

CONCLUSION

To cope with the issues of decreasing population and a large geographical area of Newfoundland and Labrador, virtual schooling was introduced under necessity. However, it evolved over time through various steps which were taken in the past. The inception of web-based courses through the CDLI is one of the major historical development in the province. As the proliferation of virtual schooling is growing, the demand of change in traditional teaching is also increasing. Therefore, there is an immense need of virtual teacher training. It is time to start e-teacher training at undergraduate and at graduate levels. There is also the possibility of additional e-learning support at grades below the high school level that needs to be investigated. There is also need to explore the issues related to virtual schooling such as course design and delivery, students support through the CDLI and school-based support, the roles of e-teachers and on-site facilitators. A systematic research study on the CDLI may also enhance our understanding of the program.

BIODATA and CONTACT ADDRESSES of the AUTHOR

Nadeem SAQLAIN is a Sessional Instructor and a Doctoral Candidate with the Faculty of Education, Memorial University of Newfoundland. Before joining Memorial, he worked for six years as a Lecturer at University of Tabuk in Saudi Arabia. He was also involved in pedagogical assignments at school levels both in Saudi Arabia and in Pakistan for eight years. He completed his master's degree in education at Memorial University. His areas of interest are rural education, E-learning, rural development, multi-age education, small schools, school closure and consolidation, and Differentiated Instructions . He has attended numerous conferences, symposiums, seminars, and lectures in different parts of the world. He is an active member of some of the professional associations in Education: The Canadian Society for the Study in Education (CSSE), Canadian Network for Innovation in Education (CNIE), Canadian Association of Foundations of Education (CAFE), and the Canadian Committee of Graduate Students in Education (CCGSE).

Nadeem SAQLAIN
Faculty of Education
Memorial University of Newfoundland
A1B 3X8
St. John's, NL, Canada
Telephone: +1 (709) 864-6927
Email: nadeems@mun.ca

REFERENCES

Barbour, M. K. (2005). From telematics to web based: the progression of distance education in Newfoundland and Labrador. *British Journal of Educational Technology, 36*(6),1055-1058.

Barbour, M. K. (2007). Portrait of rural virtual schooling. *Canadian Journal of Educational administration and Policy, 59,*1-21.

Barbour, M. K. (2008). Portrait of rural virtual schooling. *Canadian Journal of Educational Administration and Policy, 76*(3), 7.

Barbour, M. K.,& Mulcahy, D. M.(2009). Beyond volunteerism and good will: Examining the commitment of school-based teachers to distance education In I. Gibson et al. (Eds.), *Proceedings of the annual conference of the Society for Information Technology and Teacher Education* (779-784). Norfolk, VA: AACE.

Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education, 52*(2), 402-416. doi:10.1016/j.compedu.2008.09.009
Barbour, M.K. (2013). *State of the nation: K-12 online learning in Canada*. Retrieved from http://www.openschool.bc.ca/pdfs/state_of_nation-2013.pdf

Boone, W. (2010). *The evolution of e-learning in small rural schools in Newfoundland and Labrador.* 1-80. Retrieved from http://www.mun.ca/killick/documents/Evolution_ E_Learning_NL.pdf

Burke, V. (1935). Statistical report of the Bureau of Education for the fiscal years ended June 30, 1931, 1932, 1933. St. John's, Newfounland, department of Education. Retrieved from http://collections.mun.ca/PDFs/cns_tools/StatisticalReportoftheBureauofEducation19311933.pdf

Cavanaugh, C. & Clark, T. (2007). The landscape of K-12 online learning. In Cavanaugh, C. & Blomeyer, B. (Eds.), *What works in K-12 online learning*. Eugene, OR: International Society for Technology in Education.

Compton, L. K. L., Davis, N., & Mackey, J. (2009). Field experience in virtual schools-to be there virtuality. *Journal of Technology and Teacher Education, 17*(4), 459.

Crocker, R. (2007). *Distance learning: Access and outcomes*. Retrieved from http://www.mun.ca/killick/documents/TrendsReport_Draft2.pdf

de la Varre, C., Keane, J., & Irvin, M. J. (2011). Dual perspectives on the contribution of on-site facilitators to teaching presence in a blended learning environment. *Journal of Distance Education, 25*(3).

Department of Education. (1938). *Annual report of the department of education, 1938* St. John's (N.L.).

Department of Education. (1950). *Annual report of the department of education, 1950* St. John's (N.L.).

Department of Education. (1957). *Annual report of the department of education, 1957* St. John's (N.L.).

Dodd, C., Kirby, D., Seifert, T. & Sharpe, D. (2009). The impact of high school distance e-learning on rural students' university achievement and persistence. *Online Journal of Distance Learning Administration, 12* (1).

Education Statistics (2011/12). Department of Education, Government of Newfoundland and Labrador. Retrieved from http://www.ed.gov.nl.ca/edu/publications/k12/stats/index.html#1112

Johnson, T. (2011). *Perceptions of distance education in Newfoundland and Labrador: 1999-2009.* 1-80. Retrieved from http://www.mun.ca/killick/reports_papers/Historical_Study.pdf

Mulcahy, D. M. (2002). Re-conceptualizing distance education: Implications for the rural schools of Newfoundland and Labrador. *The Morning Watch, 30*(1-2). Retrieved from http://www.mun.ca/educ/faculty/mwatch/fall02/Mulcahy.htm

Mulcahy, D. M. (2007). Current issues in rural education in Newfoundland and Labrador. *Education in Rural Australia,17* (1), 17-39.

Murphy, E., Rodriguez-Manzanares, M. & Barbour, M. (2011). Asynchronous and synchronous online teaching: Perspectives of Canadian high school distance education teachers. *British Journal of Educational Technology*, 42(4).

Noseworthy, R. P.(1997). *The school car*. Whitbourne, Newfoundland: R.P.N. Publishing

Press, H., Galway, G., & Collins, A. (2003). Maintaining quality programming in rural Newfoundland and Labrador: A case study in policy and structural change. *Education Canada, 43*(3), 20-23, 38-39.

Rice, K. (2012). *Making the move to K-12 online teaching*. Pearson Education, Inc.

Riggs, F. T. (1987). *Report of the small schools study project.* St. John's, Newfoundland and Labrador: Queen's Printer.

Roblyer, M. D. (2005). Who plays well in the virtual sandbox? Characteristics of successful online students and teachers. *SIGTel Bulletin,* (2).

Saqlain, N. (2013). From Railcars to Virtual Schooling: A History of Distance Education and E-Learning in Newfoundland and Labrador. *The Morning Watch, 41* (1-2), 1-9.

Saqlain, N. (2014). Actualizing Virtual Teaching. *The Morning watch, 42* (1-2), 1-6.

Sheppard, B., Boone, W. & Stevens, K. (2001). Information technology, innovation and success in a small rural school. *The Alberta Teachers' Association Magazine, 82* (2).

Sparkes, R. & Williams, L. (2000).*Supporting learning: ministerial panel on educational delivery in the classroom.* St. John's, Newfoundland and Labrador: Queen's Printer.

Stevens, K. (2006). Rural schools as regional centres of e-learning and the management of digital knowledge: The case of Newfoundland and Labrador. *International Journal of Education & Development using Information & Communication Technology, 2*(4), 119-127.

Stevens, K. (2007). The development of virtual educational environments to support inter-school collaboration. *Turkish Online Journal of Distance Education, 8*(2), 29-37.

Warren, P. (1967/1968). *Report of the Royal Commission on Education and Youth.* Government of Newfoundland and Labrador.

Zucker, A. A., & Kozma, R. (2003). *The virtual high school: Teaching generation V*. Teachers College Press.