



Killick Centre for E-Learning Research A Community University Research Alliance

From radio broadcasts to virtual reality: A case study of distance education in Hermitage Bay schools

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The Killick Centre for E-Learning Research is funded by the Community-University Research Alliance program (CURA) of the Social Sciences and Humanities Research Council (SSHRC) of Government Canada



Newfoundland & Labrador, Canada

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Abstract

Newfoundland and Labrador has one of the most innovative high school distance education programs in the world. However, it was not so long ago that coastal boats and radio broadcasts were the chief source of information about the world outside the cove. "Parents ... thought that their sons would grow up to be fishermen and their daughters would be fisherman's wives" (Harris 1968, p.107). WWII changed this outlook through unprecedented levels of employment and demands for an educated labour force (MacLeod & Brown 2005). "One of the prime goals of the Newfoundland Government in 1949 [at the time of Confederation] was to increase access to and opportunity in education" (Smallwood 1988, v.2 p.665). To accomplish this goal, rural families resettled and were encouraged to resettle to *designated growth centres* (Smallwood, 1985). It was not until the establishment of the Small Rural Schools Distance Learning Project in the late 1980's that rural students were able to remain near their home community and have a choice in high school course offerings (Fizzard 1991). This study is focused on the history of distance education in the three remaining schools in Hermitage Bay: Victoria Academy in Gaultois, St. Peter's All-Grade in McCallum, and John Watkins Academy in Hermitage-Sandyville. Secondary data analysis was used to investigate trends in course enrolments and students' academic success between 1988 and 2007. School administrators and former students were interviewed and their opinions on distance education are summarized.

Schooling in Hermitage Bay

Hermitage Bay (HB) is located west of Fortune Bay along the south coast of the Island of Newfoundland, Canada, between Pass Island at the tip of the Hermitage Peninsula and Bonne Bay just west of the entrance to Baie d'Espoir. The rugged bay extends northeast approximately forty kilometres inland and is bound by steep cliffs and deep fjords. Twenty nine stations, settlements and communities once dotted the shores of HB; however, six of these had disappeared by the 1901 Newfoundland census and another eight had disappeared by the 1945 census. There were fifteen communities in HB at the time of Confederation with Canada: Furby's Cove, Gaultois, Great Jervis, Grole, Hardy's Cove, Hermitage, McCallum, Muddy Hole, Pass Island, Piccaire, Pushthrough, Richard's Harbour, Round Cove, Round Harbour, and Stone Valley. Hermitage-Sandyville, with a 2006 population of 499 (Statistics Canada, 2006), is accessible by car via route 364 from the Harbour Breton Highway (route 360). The only other communities still existent in HB, Gaultois with a 2006 population of 265 and McCallum with a 2006 population of 115 (Statistics Canada, 2006), are accessible from Hermitage-Sandyville using the provincial ferry service. The fishery has traditionally been for cod, herring, salmon, and lobster; with whaling stations operated for short periods of time at Gaultois and at Baleen just north of McCallum.

Many communities in Hermitage Bay had their own schools by the late 1850's. The first school in HB appears to have been constructed at Hermitage in 1839 by a Methodist missionary named William Marshall for a student population of over thirty (Smallwood 1988). St. Saviour's Church of England Church was consecrated in 1854 and a school was opened in 1859 which lasted until a new school was constructed in the 1920s. In 1845, Gaultois had a student population of thirty-one attending a school operated under the Roman Catholic Board of Education. In 1877 a second school was erected in Gaultois operated by the Church of England and lasted until a new school was constructed in the 1920s. St. Peter's All-Grade, the first school built at McCallum, opened its doors in 1881 and was replaced in 1928 and 1938.

The Reality before the Rhetoric

Phyllis Harris (ne: Hunt), who was born in Gaultois in 1936, recalled vivid images of her one-room school that was located "down on the point, very near the water."

We had one teacher for twenty-five or thirty, or maybe thirty-five students from primer to grade eleven. The teacher usually came out of school himself in June with a grade eleven education and went to summer school for six weeks. ... We studied arithmetic, grammar, literature, geography, history, art, spelling, and reading. As we progressed into other grades we had literature, grammar, algebra, geometry, Latin, which I didn't like very much. ... We moved up to a new school in 1949. ... There were no bathrooms in our school, just a little outhouse out over the brook.

In 1949, Phyllis was a grade seven student attending school in a prosperous outport community; a community with no unemployment, and with only a few disabled people drawing social assistance. She recalls listening to talk about Confederation with Canada and promises about the future.

When we moved into our new school that was the year we joined Confederation, and I can remember up to Confederation people coming into Gaultois for meetings. Joey Smallwood came there for a couple of meetings, I think. And, of course, the children were all excited because they knew they were going to get something called the *baby bonus*. ... And there would be better roads, and maybe, better travelling, boats and that along the coast. All over we would benefit more with social programs ... The work in Gaultois up to that point had been dried fish, but ... a fresh fish plant [was] built in 1952 and from that point up till the Moratorium Gaultois was a very booming community.

Phyllis's remarks bring to mind some of the rhetoric associated with Confederation. Twenty years after Confederation, in 1969, a 175-page booklet entitled *To you with affection from Joey: A short message from your premier* was published by the Publication Division of the Action for Joey Committee. This booklet is an excellent example of the ongoing rhetoric that has become part of the development of the education system in the province.

If you searched all Newfoundland with searchlights in 1949 you would have found 169 teachers with University grade. ... University grade teachers, teachers with two years of university, and those with one year, came to 1011 altogether. Today [in 1969] there are 4238 of them. And that's progress! (Smallwood 1969 p.39)

84. Eighty-four. In all Newfoundland and Labrador. 84. 84 what? 84 schools with indoor toilets. That was Newfoundland on the day that I became Premier. Today [in 1969]: 838 schools have indoor toilets. We have not, in those years, produced any new or original education theory, philosophy or practice. But we have put indoor toilets in 744 schools that didn't have them. That's progress. (Smallwood 1969 p.37)

These are examples of rhetoric concerning changes that had been accomplished by 1969. But trained teachers and indoor toilets were just the start of the changes to occur in the provincial education system.

We Newfoundlanders can say with modesty that we have made progress in education since 1949. Not as much as we would like, but a lot. Not enough to put us in Canada's front rank, but quite impressive compared with the period before Confederation. Let's say that we have at any rate laid a foundation; or the start of a foundation. (Smallwood 1969 p.42)

Restructuring and then Resettlement

Schools existed in Furby's Cove, Gaultois, Great Jervis, Grole, Hermitage, McCallum, Muddy Hole, Pass Island, Piccaire, Pushthrough, and Richard's Harbour in the year that Newfoundland joined Canada. After Confederation, as populations shifted and people were resettled, the community of Richard's Harbour found it difficult to retain teachers and closed the school (Smallwood 1988). The Mary Magdalene School at Muddy Hole continued to exist into the early 1950's but eventually closed as people chose to move away. The school at Pushthrough, which had existed since 1845, was downsized to a one-room school by 1960 and closed shortly after that. Even the new schools, constructed after Confederation at Grole in 1958 and at Furby's Cove in 1961, closed their doors in the early 1970's in response to resettlement and road construction. Pass Island, one of the oldest communities in HB, bears the distinction as the last community in the province to have been officially "resettled" in 1974 (Smallwood 1988).

Guy Nash, one of the collaborators for this paper, attended grades one to five at the Happy Blackbird School in Furby's Cove between 1965 and 1970. The school was so named because blackbirds were commonly seen happily picking their way through the burnt remains of the previous school. "The new school consisted of two rooms, a classroom and a small library, with the washroom located out back. A single teacher taught as many as eighteen students grades one through eight." In September 1970 he went to Hermitage to board with relatives and attend grade six. The following year, after road construction was completed, he returned to live at home in Furby's Cove and was bussed to school in Hermitage. The Happy Blackbird School was closed in 1972 and Furby's Cove was resettled in 1973. Such bussing was also part of the rhetoric of change associated with growth in the provincial education system.

20 years ago the number of school busses in Newfoundland was not large. It was not medium. It was not even small. It was zero – none. Now [in 1969]– ... School busses ... 505 ... Miles travelled by school busses ... 2,577,720 ... Students carried by school busses ... 28,013 ... Cost to government of school busses ... \$2,759,234. (Smallwood 1969 p.38)

However, the purpose of bussing in rural areas has always been to connect smaller communities to larger service centres, not to transport students to schools. Students in isolated coastal communities such as Gaultois and McCallum have never been bussed to school within their community and continue to walk along well-worn pathways sixty years after Confederation. Brenda Fudge, a former student of St. Peter's All-Grade School who attended classes in the old St. Peter's building until 1973, described school life in the early 1970's.

[Before 1974,] it was a one-room school and everyone was in the same classroom. There were no washrooms in the old building and if you wanted to go to the washroom you had to go home. When I started school we used a potbelly stove for heat, although a furnace was installed in the late 1960's ... We moved in to the new building during Easter Week of 1974. There were ninety students and four teachers ... There were *so many students* that the grade six and seven students had to attend school in the community centre. ... There was still no grade eleven offered at the school and I had to leave McCallum to finish high school. ... So it was arranged that I board with a family in Port-aux-Basques to do my grade eleven.

Reality in the Twenty-first Century

Victoria Academy (VA) is located on top of a hill overlooking the community of Gaultois, Long Island. Murals just inside the main entrance painted by the 2002-2003 distance education (DE) Art Technology class depict the old and new buildings. The new school has a large gym, a small library which doubles as the DE room, one science lab, and five classrooms. There are currently thirty-two students enrolled in grades kindergarten to twelve and the school has been allocated five and one-half teaching units. Since 1998-1999, when there were eighty-seven students at the school, the population has declined by 60%. Mr. Derek Drover has been the school principal since 2000 and a teacher at the school since 1990. VA and all schools in HB are directed by the Nova Central School District (NCSA), Gander.

St. Peter's All-Grade (SP), McCallum, has an incredible view of Mosquito Island, Hermitage Bay, Pass Island, and Saint Pierre and Miquelon from the school's play park. The current building was constructed in

1974 to replace a pre-Confederation one-room school. A multi-purpose room serves as the school gym; a well-stocked classroom doubles as the science lab; and three other classrooms are located in the building. There are currently ten students enrolled in grades two to twelve, and NCS D has allocated two and one-half teaching units. Since 1998-1999, when there were twenty students at SP, the population has declined by 50%. Mr. Guy Nash has been the school principal since 1994 and a teacher at the school since 1981.

John Watkins Academy (JWA) is located off the main road in Hermitage-Sandyville. The building was constructed in stages; the high school was constructed in 1973 and the primary–elementary school was constructed in the 1980s. JWA increased or maintained the size of its student population as schools closed in Grole, Furby’s Cove, Pass Island, Sandyville, and Seal Cove; however, the school population has diminished in recent years. The current school population consists of ninety-eight kindergarten to grade twelve students and eight teachers. This compares to an estimated 1998-1999 school population of 200. Mr. Johnathan Skinner has taught at JWA for twenty-nine years, since 1979. He was the school vice principal from 1996 to 2004, and has been the principal since 2004. He humbly states, “I’ve seen the school go through a number of changes.”

Forms and Models of Education Involving Distance

Two distinct forms of education involving distance have influenced students and schools in Newfoundland and Labrador (NL) and in Hermitage Bay (HB). The first form involves moving students from their homes to neighbouring communities to attend school. For the purpose of this paper, this form can be called *transportative distance education* (TDE) and includes such practices as boarding and bussing. Throughout the history of education in NL, families chose or were asked to move to take advantage of high school sports programs, larger class sizes, or more onsite programming choices. There are stories of pre-Confederation students, such as those from Piccaire, who used to “row around the point” or “walk the trails” to the school in Gaultois. This traditional practice continues today although the names of the communities are different. Derek has pointed out that Victoria Academy “lost three [students this year] because their families moved to larger centres.” Organized TDE began with the introduction of school busses. New roads constructed in the 1960’s have enabled busses to carry students away from smaller communities to Hermitage. Within a few years these smaller communities were “officially” resettled. There is ample anecdotal evidence that student bussing on the Hermitage Peninsula led to the loss of local schools and, subsequently, to the depopulation and loss of coastal communities.

The second form of distance education is the form in which information is moved between teachers and students. This form can be called *communicative distance education* (CDE or DE) and includes such practices as correspondence courses and web-based courses. Prior to 1949, correspondence courses and apprenticeships were the means by which people were trained in the trades and completed a technical education. Some students who took correspondence courses had not completed high school (HS) and it is debatable as to whether correspondence courses were attempts by individuals to enrich HS programming in technical areas. Since 1988, HS CDE had been available through electronic means: first through the TETRA Model, which began as the Small Rural Schools Distance Learning Project (Fizzard 1991), and more recently through the CDLI Model, which began as the Vista Digital Intranet (Stevens 2004).

The TETRA Teleconference Model (1988-2002)

Twenty years ago, in 1988, the provincial government introduced communicative distance education (CDE) and, thereby, provided the means by which students in smaller schools could continue to live at home and complete their HS education. Boarding, bussing, and the resettlement of families were no longer necessary. This first version of electronic DE in NL was managed locally by school districts under the auspices of the Department of Education. In fact, it began as an auxiliary use of the TeleMedicine system which was developed in 1979 for training health professionals. The Telemedicine and Educational Technologies Resources Agency (TETRA) was created as distance education became accepted.

TETRA DE was first offered at Victoria Academy (VA), Gaultois, in 1988-1989. As Derek explains, "When it was [being used] in the school it was considered to be *avant garde* technology. We were quite proud to be one of the schools initially involved in this." DE was first offered at John Loveless Academy (JLA), Seal Cove, in 1991-1992; at St. Peter's All-Grade (SP), McCallum, in 1992-1993; and at John Watkins Academy (JWA), Hermitage, in 1995-1996. It is interesting that CDE was first offered at JWA in 1995, which was the first year HS students from Seal Cove were bussed to Hermitage. Although it appears that programming benefits did accrue to students as a result of being bussed to Hermitage, it is ironic that some of the new TDE students from Seal Cove became the first CDE students at JWA. By 2001, the final year of the TETRA course offerings, provincial course enrolments had risen to 895 representing 706 students in 11 courses taught by 27 full- and part-time teachers (Brown, Sheppard & Stevens 2001).

Harrison Rose, a teacher at Victoria Academy, explains, "I was a teleconference student from 96-97 up till the time I graduated in 98-99. I took advanced math, three levels. I took 1201, 2201, and 3201, and I took a third level calculus course, two chemistry courses, and two physics courses." He described most DE classes as being pretty simple. "I went to the DE room with the other students who were taking the same course and sat around a microphone and a writing tablet. Students listened to a teacher lecturing and responded to questions when asked. ... Exams were usually supervised by the principal of the school." Today, Harrison is the teacher responsible for CDLI DE in the same school in which he took TETRA DE.

The CDLI E-learning Model (2002-present)

In 2001, the provincial government created the Centre for Distance Learning and Innovation (CDLI) based on recommendations contained in the *Sparks-Williams Report on Educational Delivery in the Classroom*. That report favourably described the forerunner to CDLI, the Vista Digital Intranet, a successful partnership between Memorial University's Centre for TeleLearning, the Student Teacher Education Multimedia Network (STEM~Net), and the Vista School District. In the pilot year, 2001-2002, CDLI offered ten courses to forty schools or one pilot course per school district. In the implementation year, 2002-2003, all courses started in September through the TETRA teleconference system but "by the time Christmas came along students and teachers were asking to put the teleconferencing equipment aside and to only use the newer web courses" (Bob Hipditch, personal communication 2008).

Students attend CDLI classes by either going to a room set aside for DE, such as exists at JWA, or by going to a library-resource room, such as at VA, or by putting on their headsets and logging onto their computers at the back of a classroom amidst onsite classes, such as at SP. This *in-the-classroom model* was the original delivery model suggested to schools by CDLI. However, as Guy explains, this model can be complex to manage: "One student for example could be doing math, another could be doing science, and another could be doing French; [while] I'm doing language in [grades] four and five and possibly social studies in [grades] seven and eight." Once logged on, the student enters a virtual classroom with a whiteboard, text messaging, voice-over-IP, graphics capability, Internet browsing capability, and a calculator. Teachers are able to take attendance, pole students for answers to questions, group students to work in virtual rooms, and remotely control students' computers through application sharing. Occasionally, the polycom unit is used. Derek describes the polycom as "the most recent addition to *our DE arsenal* ... where the CDLI teacher and the student can interact visually in real time. It's as close to having the real teacher in the school as you can get." Guy also praises the new technology in stating "Last year it worked really well when we offered the Experiencing Music 2200 course." CDLI science labs are often done after school hours, as Guy describes, "After school ends at 3:05 p.m. [students] would come to me and say 'I need to have a lab done' and 'I need this equipment.' So they would come in here and take out their equipment ... and they'd set up on these tables and do their lab. I would bring some books in here and do my planning for the next day, or do some admin work."

Developing Images of DE Students and Schools

This research explored school registers, student cumulative records, the provincial HS database, students' opinions, and school administrator reflections in an attempt to characterize *the distance education student*

and the distance education school. Any student in Newfoundland and Labrador who is or has taken a DE course is commonly referred to as a *CDLI student*. Some of these students complete only 5% of their program online and 95% of their program onsite. This definition is generally accepted in the literature, in practice, and will be accepted here. However, a significant number of students who have attended Victoria Academy (VA), St. Peter's All-Grade (SP), or John Watkins Academy (JWA) have completed greater than 25% of their HS program online. These students may more properly be called DE students. DE students can be characterized based on their persistence with *chained courses*. Chained courses are courses which are sequential in nature, such as Math 1201, 2201, 3201, or Physics 2204, 3204. If a DE student takes the first course in a chain it generally holds true that he or she will take all the courses in a chain. It has been confirmed that chains are usually broken for one of two reasons: the student moves to a new school; or the student decides not to continue with courses. At VA and SP, the majority of TETRA and CDLI DE chains were broken by TDE when families chose to move to another community for educational purposes.

Any provincial school in which a DE course is taken, possibly representing as little as 2.5% of that school's HS program, is thought of as a *CDLI school*. This definition is generally accepted in the literature, in practice, and will be accepted here. However, some schools offer as much as 25% of their HS program through DE courses and may more properly be called a DE school. Other DE schools have high ratios of DE student course enrolments to total course enrolments. These schools also can be characterized by the percentage of HS students enrolled in DE courses. For example, in the 2007-2008 school year, VA and SP respectively have 90% and 100% of their HS students enrolled in at least one DE course.

Victoria Academy, Gaultois

Victoria Academy (VA) was one of the forty pilot schools for Math 1201, the first TETRA DE course which was offered during the 1988-1989 school year. One of the school's original five DE students went on to successively complete M2201 and M3201, and be recognized by the provincial government with a plaque marking the accomplishment. From this early start, the school has participated in DE eighteen of the last twenty years. The only non-participation years were 2000-2001 and 2001-2002. Derek Drover, the principal, has suggested that during these years students and parents had become disappointed and were avoiding DE. Students have enrolled in sixteen different HS DE courses over the past twenty years. The most popular courses were math, representing 42% of all DE course enrolments, and chemistry and physics each representing 15%. Since the introduction of CDLI courses the most popular course enrolments have been math at 29%, art technologies at 23%, and writing at 20%. Physics courses, which were popular under the TETRA teleconferencing model, have never been taken by students under the CDLI e-learning model.

DE has been an important program component for forty-six of the estimated 160 HS students who have attended VA since 1988. Of these forty-six students, fifteen students took five or more DE courses, this being equivalent to greater than 25% of their HS program. Four students took nine or more DE courses, or more than 50% of their HS program through DE. The majority of DE students were enrolled in two or three DE courses. In the history of DE at VA there are eighty-one possible chains, sixty-one of which, or 75% of which, were kept. This indicates a tendency for students to complete successive courses, which implies repeated student decisions to continue with DE courses. However, since the start of CDLI courses, of fourteen possible chains only eight have been kept. Enrolment data since 2002-2003 clearly indicates that students are choosing unchained courses, such as Writing 2203, and also choosing public exam courses at the end of a chain, such as level three math and science courses.

In 1998-1999, the last year of participation in TETRA course offerings, 26% of all HS students were taking at least one DE course. This indicator can only be calculated back to the year 1998-1999 because a fire destroyed the school and school registers that year. However, 26% contrasts with the last five years in which 71% - 94% of HS students took at least one CDLI course. Between 1993 and 2001, 14% to 28% of the school's HS program was offered through DE under the TETRA system; however, in the past five years, the school has consistently offered 23% to 25% of its program through CDLI. Between 1993 and 2001, DE enrolments accounted for 3% to 8% of total HS course enrolments; however, in the past five years, DE course enrolments account for 17 to 23% of the total HS course enrolments. Note that for the TETRA

period the enrolment percentage was significantly lower than the program percentage. This is as it should be in a school with more students than course offerings.

St. Peter's All-Grade, McCallum

St. Peter's All-Grade (SP) is the smallest of the three schools under study. However, it is probably the *best case* with respect to data reliability given that all the school's records, teacher's registers, and cumulative files have been preserved since the opening of the building in 1974. It has not undergone the restructuring, amalgamation, and reorganization experienced at JWA; nor has it suffered loss due to fire as has VA. In addition, Guy Nash, the school principal, has been the administrator there since 1994-1995, the third year of the school's participation in DE.

Students first participated in TETRA DE during the 1992-1993 school year when two level one students completed DE Math 1201 and four level two students completed DE Physics 2204. One of these two math students successively completed M2201 and M3201. Students at SP have enrolled in twenty different DE courses over the past sixteen years. The most popular courses were math, representing 31% of all DE course enrolments, physics representing 23%, and chemistry representing 11%. When asked about important courses under the TETRA system, Guy stated: "I think the physics was very essential to students, getting an extra science and also the advanced math better prepared them for going on to post-secondary institutions." However, in recent years, since the introduction of CDLI courses, the three most popular disciplines have been math at 19%, art at 14%, and French at 13%. Guy suggests that "It has changed over the years because more courses have come in. You have lots more [courses] now." However, the data indicates that courses which were popular under the TETRA system also remain popular under the CDLI system.

DE has been an important program component for twenty-five of the thirty HS students who have attended St. Peter's since 1991. Of these twenty-five students, eleven students took five or more DE courses, this being equivalent to greater than 25% of their HS program. Four students took nine or more DE courses, or more than 50% of their HS program; and two of these have taken more than fourteen DE courses, or 75% of their program. The majority of DE students were enrolled in three to six DE courses. In the history of DE at SP there are sixty-five possible chained courses, forty-six of which, or 71% of which, were kept. This indicates a tendency for students to complete successive courses and repeated student decisions to continue with DE courses. Since the start of CDLI courses, eighteen of twenty-two possible chains have been kept: 82%. Enrolment data since 2002-2003 clearly indicates that students are choosing chained courses, such as math, physics, chemistry, and French; as opposed to unchained or public exam courses.

In any given year, the ratio of the number of students taking at least one DE course to the total number of HS students fluctuates wildly between 40 and 100%. These fluctuations are the result of a small HS population which has been under ten students since 1993. However, in four of the past five years 100% of the HS student population has been enrolled in DE. The ratio of the number of DE courses taken to the number of HS courses offered, suggests that, between 1991-1992 and 2001-2002, 13 to 24% of all HS courses offered were TETRA courses. In the past five years, 30 to 72% of HS courses were CDLI courses. The ratio of the number of DE enrolments to the total number of HS course enrolments was consistently 9 to 15% under the TETRA system and has been 30 to 64% under the CDLI system. The increase in both indicator ratios was anticipated given the declining school population.

John Watkins Academy, Hermitage-Sandyville

John Watkins Academy first offered DE courses during the 1995-1996 school year; coincidentally, the same year that students from John Loveless Academy (JLA), Seal Cove, were first bussed to Hermitage. Two students who were taking DE courses at JLA became two of the first eight DE students at JWA. Although research into DE at JWA is still ongoing, initial conversations with a teacher who supervised French DE at JLA suggest that the 1993-1994 school year data can be reliably extrapolated back to the 1991-1992 school year during which it appears that at least three students completed TETRA French 2100, Math 1201, and possibly Physics 2204. JWA and JLA students have enrolled in twelve different DE courses over the past

seventeen years. The most popular courses were French, representing 39% of all DE course enrolments, math representing 31%, and physics representing 16%. Since the introduction of CDLI courses, the three most popular courses have remained French at 35%, math at 24%, and physics at 21%. However, Jonathan Skinner, the principal, argues that some of the less popular courses are also important.

We've had a student here the past couple of years who is very artistically inclined, so through CDLI we were able to offer that one student two art courses – Art Technologies 1201 and Art & Design 3200. Now that's been a super benefit from CDLI because that enabled that student to pursue a personal interest and, at the same time, gain graduation requirements.

DE has been an important program component for sixty-eight HS students who have attended JWA and JLA since 1991. Of these sixty-eight students, fifteen students took five or six DE courses, this being equivalent to greater than 25% of their HS program. No student took more than six DE courses and the majority of students were enrolled in only one or two DE courses. In the history of DE at JWA and JLA there are eighty possible chains, fifty-one or 64% of which were kept. This may indicate a tendency for students to complete successive courses; however, the assumption of chained courses was used to extrapolate student enrolments for the 1991-1992 and 1992-1993 school years. Since the start of CDLI courses, only fourteen of twenty-nine possible chains have been kept. Student enrolment data from 2005-2006, 2006-2007, and 2007-2008 school years has not been collected and may change any conclusions which may be drawn. However, data from school years 1993-1994 to 2004-2005 definitely indicates a tendency towards students choosing level three courses with public exams.

The ratio of students taking at least one DE course to the total number of HS students could not be calculated for JWA because school populations have not yet been determined. Work will be conducted in the future to complete this task. The ratio of the number of DE courses taken to the number of HS courses offered, suggests that 20% of the course offerings at JLA between 1991-1992 and 1994-1995 were through DE, as compared to only 5% of the course offerings at JWA between 1995-1996 and 2001-2002. Under the CDLI system, the percentage of DE course offerings at JWA has been consistently between 19 to 24%. The ratio of the number of DE enrolments to the total number of HS school enrolments was consistently 1 to 4% under the TETRA system and has ranged from 9 to 11% under the CDLI system.

Comparing Images

The average number of DE students in HB schools between 1993-1994 and 1997-1998 was eighteen; between 2002-2003 and 2007-2008 it was thirty-one. There was a decline in DE enrolment between the years 1998-1999 and 2001-2002 partially related to increased dissatisfaction with the program and partially associated with the *phasing out* of TETRA DE and the *phasing in* of CDLI DE. In every other year DE has been a factor in HS programming. One hundred thirty nine students have taken at least one DE course in a HB school since the 1988-1989 school year. Of these, forty-one or 29% took at least 25% of their HS program through DE; eight have taken greater than 50% and two have taken greater than 75%. These forty-one students may more properly be called *distance education students* than the many more students who were enrolled in an occasional course. It is unknown at the present time how this value compares to other areas of the province.

The schools have different profiles when it comes to describing their involvement in DE over the years. Except for the 1999-2000 to 2002-2003 dip in course offerings, VA has consistently offered approximately 25% of its HS programming through DE. However, as school populations have declined, the percentage of course enrolments has increased from an average value of 7% under the TETRA system to 20% under the CDLI system. HS course offerings at SP have increased from 20% under the TETRA system to more than 50% under the CDLI system; and, in recent years, 100% of all HS students have taken at least one and as many as sixteen DE courses. TETRA course offerings at JWA generally represent 5% of HS courses and only 2% of HS enrolments. However, these values have climbed to 20% of courses and 10% of enrolments under the CDLI system. Based on these figures, it appears that VA and SP have been *distance education schools* for some time. Until recently, JWA appears to have been a school supplementing programming with DE course offerings.

Measuring the Success of Distance Education

The success of a program can be judged based on the accomplishment of the goals to which it is held accountable. The Centre for Distance Learning and Innovation (CDLI) has six stated goals: four relating to the development and delivery of Web-based courses, one relating to the organizational development of knowledge and skills, and one relating to participation in research and development. However, the success of distance education must be judged by student achievement and not program delivery, just as schools are judged by student achievement and not program delivery. The standard in educational programming is not "We did this" but "We caused this." Further, student achievement in the DE setting should not be defined any differently than it is in more traditional settings. *Student achievement*, regardless of setting, is the summative systemic evaluation of the completion of curricular outcomes. The standing practice is to use the final course mark as the measure of student success in a program and, hence, the success of a program itself. Student achievement over the twenty year period of DE in Hermitage Bay (HB) schools can be explored through accumulating student grades over courses. These course marks have been categorized as grades according to Memorial University of Newfoundland (MUN) *standards*: 0-47% represented by an "F," 48%-52% by a "D," 53%-62% by a "C," 63%-77% by a "B," and 78%-100% by an "A."

A second measure for the success of an educational program must be the *long-term use* of achieved curricular outcomes. This study explores student choice related to post-secondary (PS) education and career employment. For example, a student chooses the long-term use of outcomes achieved in a chemistry course when they choose to pursue a bachelor's degree in chemistry, a certificate in welding, employment as a nurse, or employment testing oil wells. It must be stated that this paper is based on the PS and career pursuits of former students as known by school teachers and local community residents; however, future research will include interviews of graduates to test the validity of proposed cause-and-effect relationships. It must also be reiterated here that a DE student, as defined in this paper, includes any high school (HS) student who has taken at least one DE course. It would be reaching to claim that a single DE course was the dominant influence on a student's future PS and career choices. This research uncovered sufficient evidence to conclude that students who did not take HS DE courses were also able to pursue successful academic and career choices. It must also be recognized that the employment choices of graduates may have more to do with financial necessity or employment availability than HS course selection or student career aspirations. Having said this, the question generally associated with the success of DE programming has always been *access* to academic and career opportunities beyond those available locally.

Victoria Academy, Gaultois

Of the 200 DE courses completed by students at Victoria Academy since 1988, there were 94 A's, 61 B's, 27 C's, 9 D's, and 9 F's. Hence, 47% of all grades were A's. Since the 2002-2003 school year there have been ninety-six completed CDLI courses with 40% of all grades being A's; with the breakdown as: 38 A's, 35 B's, 14 C's, 3 D's, and 6 F's. This relative drop in the percentage of A's is interesting, especially given that the TETRA enrolments were in *advanced-level* courses such as advanced math, physics, and chemistry. Recent enrolments under the CDLI system are in a wider variety of *advanced-level and academic-level* courses. The drop in the percentage of A's, yet stability in the percentage of D's plus F's, may reflect the fact that students with a wider variety of learning skills and levels of preparation are now taking DE courses.

Of the forty-six graduates who had taken at least one HS DE course, teachers at VA were certain that thirty-four had pursued PS degrees or certificate programs, and that 3 had not. The pursuits of nine graduates were unknown. Hence, of the thirty-seven graduates whose fates were known, 92% had pursued a university, public college, or private college education. The most popular PS choice was to obtain a B. Ed., with nine of thirty-four or 26% of graduates having completed or currently completing the program at MUN. Other popular choices were training for the Canadian Armed Forces (three graduates), a certificate in seamanship or marine technology from the Marine Institute (three), a B.Sc. program (two), and a B. N. program (two). Eighty-two percent of those who chose PS studies have completed or are still engaged in their programs. Based on a loose judgement of the relevance of curriculum outcomes to the curricula of PS programs, it

appears that at least 59% of former DE students pursued PS studies in fields related to their HS DE course enrolments.

Of the forty-six graduates who had taken at least one HS DE course, teachers at VA were certain of the employment record of thirty-three graduates. Of these thirty-three graduates, twenty-seven or 82% were known or believed to be currently employed on a fulltime basis. Four are employed as teachers, three serve in the armed forces, three are employed as deckhands on freighters or oil tankers, three are employed in the medical professions, and two are employed in the construction industry. Based on a loose judgement of the relevance of curriculum outcomes to the duties associated with specific types of employment, 52% of graduates known to be currently employed on a fulltime basis are employed in occupations related to their HS DE course enrolments. Six of the forty-six HS DE course graduates, or 13%, are currently *residing locally*. In the context of this paper, *local* is defined as within the community in which a graduate attended HS, or within neighbouring communities of the Baie d'Espoir – Connaigre Peninsula area. Four of these graduates are currently employed on a fulltime basis. Two graduates are teachers while another is a licensed practical nurse, and another works for an aquaculture company. One of the teachers is currently teaching at VA while another started her teaching career at the school.

Inside the main entrance of VA, university and college graduation photographs, copies of diplomas and certificates, and awards and acknowledgements from various organizations cover an entire wall entitled *The Road to Success Begins Here*. As Derek explains, “We like to use our own success stories as models for students who are currently attending the school.” This wall is also known as *the wall of fame* because it is also meant to praise the accomplishments of graduates.

As you have seen from our wall of fame, and that is only a sampling of the number of our students who have gone on to be successful at the post-secondary level, CDLI and distance education has played a significant role in helping these students follow their dreams and to aspire to the careers they would like to follow. It obviously has benefited our students by allowing us to offer such courses as advanced math and the sciences in particular. And coupled with what we offer in our schools, CDLI has enabled us to offer a complete package or programming, or as complete as we possibly can, to ensure that our students, based on their identified needs, and the careers that they would like to follow in life, that we have been able to assist them as much as possible to achieve what they want to achieve.

St. Peter's All-Grade, McCallum

At St. Peter's All-Grade (SP), of the 115 completed DE courses since 1992, there were 74 A's, 27 B's, 7 C's, 2 D's, and 5 F's. Hence, 64% of all grades given for DE courses were A's. This compares to 70% of all grades given for the fifty-four CDLI DE courses since 2002-2003 being A's; with the breakdown as: 38 A's, 11 B's, 3 C's, 1 D, and 1 F. The increase in the percentage A's may reflect the fact that present student enrolment choices at SP are similar to enrolment choices under the TETRA system. Although current students do occasionally opt for *academic-level* courses such as Science 1206 and Art Technology 1201, *advanced-level* math, physics, chemistry, and French courses are still the norm for DE program choices.

Guy Nash, the principal, believes that these DE courses not only enable students to graduate but are the only means by which graduation is possible in small schools like St. Peter's. He states that it is impossible for small schools to offer students the high number of school graduation requirements necessary today; and, it is a bonus if students can also take courses in disciplines which “open doors” to post-secondary institutions.

You've got your chemistry and biology if you're interested in going into nursing, you've got your computer studies courses if you're interested in going into the IT field, you also got your social studies and your languages and stuff if you are interested in going on even into education, for example. DE certainly opens more doors for students. ... I also feel that distance education makes [students] more independent ... They have to learn to manage their time properly, and this will better enable them to become better post-secondary students.

Of the twenty-five graduates who had taken at least one HS DE course, teachers at SP were certain that nineteen graduates, or 76%, had pursued a university, public college, or private college education. Six were known to have not pursued PS studies. The most popular PS choices were degrees in business or nursing, or

certificates in criminology, seamanship, or secretarial. Seventy-four percent of those who chose PS studies have completed or are still engaged in their programs. Based on a loose judgement of the relevance of curriculum outcomes to the curricula of PS programs, it appears that at least 58% of former DE students pursued PS studies in fields related to their HS DE course enrolments.

Of the twenty-five graduates who had taken at least one HS DE course, teachers at SP were certain of the employment record of twenty. Of these twenty graduates, 90% were known or believed to be currently employed on a fulltime basis. Three are currently employed in aquaculture or the fishery, three are employed as secretaries, and three are employed as store clerks. Based on a loose judgement of the relevance of curriculum outcomes to the duties associated with specific types of employment, 50% of graduates known to be currently employed on a fulltime basis are employed in occupations related to their HS DE course enrolments. Nine of the twenty-five HS DE course graduates, or 36%, are currently residing locally. Seven of these are currently employed on a fulltime basis. Three work in aquaculture or the fishery, two are employed as secretaries, one is employed as a store clerk, and one works as a deckhand on an oil tanker. This percentage of local residency is the highest of the three community schools under study.

John Watkins Academy, Hermitage-Sandyville

Of the 186 DE course completions at John Watkins (JWA) and John Loveless Academies (JLA) between 1993 and 2005, there were 85 A's, 60 B's, 21 C's, 16 D's, and 4 F's. Hence, 46% of all grades given for DE courses were A's. This compares to 46% of all grades being A's for the eight-five CDLI DE courses completed between 2002 and 2005; with the breakdown as: 39 A's, 30 B's, 9 C's, 7 D's, and 0 F's. The consistency of the number of A's may reflect the fact that student enrolment choices under both the TETRA and CDLI systems favour *advanced-level* courses.

Jonathan Skinner, the principal, considers *peer presence* to be one of the benefits of DE courses. He suggests that, through DE courses, students who take advanced math or science courses "are able to be amongst their peers, even though they are amongst their peers via distance, but they're able to learn with their peers and they're better able to prepare themselves so fields like engineering, medicine, or any other type of science or advanced program." This appears to be born out at JWA as a high percentage of DE students who graduate enrol the following year in PS programs.

Of the sixty-eight graduates of JWA and JLA who had taken at least one HS DE course between 1991 and 2004, teachers were certain that fifty-seven had pursued PS degrees or certificate programs, and that eight had not. The pursuits of three graduates were unknown. Hence, of the sixty-five graduates whose fates were known, 88% had pursued a university, public college, or private college education. The most popular PS choice was a B. N., with eight graduates choosing to enrol in MUN's nursing program. Other popular choices were a B. Com. or B. Bus Adm. (five graduates), B. Ed. (four), a certificate as a welder (three), B. Sc. (two), a certificate in engineering technology (two), and a certificate in seamanship or nautical science (two). Remarkably, one hundred percent of those who chose PS studies are believed by teachers to have completed or to be still engaged in their programs! Based on a loose judgement of the relevance of curriculum outcomes to the curricula of PS programs, it appears that at least 67% of former DE students pursued PS studies in fields related to their HS DE course enrolments.

Of the 68 graduates who had taken at least one HS DE course, teachers at JWA were certain of the employment record of thirty-one. Of these thirty-one graduates, thirty were known or believed to be currently employed on a fulltime basis. Four are currently employed as nurses, three as welders, and two as teachers, oil well testers, oil tanker deckhands, or serving in the Canadian Armed Forces. Based on a loose judgement of the relevance of curriculum outcomes to the duties associated with specific types of employment, 69% of graduates known to be currently employed on a fulltime basis are employed in occupations related to their HS DE course enrolments. Five of the sixty-eight HS DE course graduates, or 7%, are currently residing locally. This is the lowest percentage of local residency of the three community schools. Four of the five local graduates are employed, two former students work as nurses, one works as a teacher, and one works as a commercial cook.

Focusing Measurements

There have been 501 DE course completions in HB schools since the 1988-1989 school year. Of these, there have been 253 A's, 148 B's, 55 C's, 27 D's, and 18 F's; or 51% A's, 30% B's, 11% C's, 5.4% D's, and 3.6% F's. Since the 2002-2003 school year and the implementation of CDLI DE courses, there have been 235 course completions resulting in 115 A's, 76 B's, 26 C's, 11 D's, and 7 F's.; or 49% A's, 32% B's, 11% C's, 4.7% D's, and 3.0 % F's. The consistency of these values suggests that academic achievement under the CDLI system is not significantly different than it was under the TETRA system. A detailed examination of how these DE course grades compare to grades given in traditional classroom environments in HB schools is the subject of a future study.

Of the 139 students in HB schools who had taken at least one HS DE course, teachers and local residents were certain concerning the PS pursuits of 127. Of these 127 students, 110 students, or 87%, continued their education in search of a PS degree or certificate; and of these 110 students, ninety-eight students, or 89%, are believed to have graduated from or are currently enrolled in their programs. The three most popular choices for PS studies are a B. Ed. (sixteen graduates), B. N. (thirteen), and a certificate from the Marine Institute (seven). Seventy of the 110 students who pursued PS education, or 64%, chose pursuits related to their HS DE course enrolments. However, only twenty of the 139, or 14%, of students who graduated having taken at least one DE course now reside in their home or neighbouring communities. Fifteen of these twenty former students, or 75%, are employed fulltime.

The Value of Distance Education: Student Viewpoints

Of the twenty former distance education students who live locally, six live in Gaultois, five live in McCallum, three live in Seal Cove and Baie d'Espoir, two live in Harbour Breton, and one lives in Hermitage. Four of these students, all of whom completed TETRA DE classes, were contacted and agreed to be interviewed. Students were asked seven questions in a semi-structured format focused on such aspects of DE as enrolment choices, in-class peer collaboration, online teaching, local administration of courses, post-secondary (PS) pursuits, employment choices, and suggestions for improving DE. The author hopes to be able to arrange interviews with more of these former DE students before this work is complete.

Harrison Rose attended high school (HS) at Victoria Academy between 1996-1997 and 1998-1999. During the course of his HS program, Harrison completed eight TETRA teleconferencing courses representing 44% of his program. His course choices were typically of many TETRA DE students, choosing four chained math (M1201, M2201, M3201, and M3105), two chained chemistry (C2202 and C3202), and two chained physics (P2204 and P3204) courses. Harrison's average mark for these courses was 95.9%, and his marks ranged from 92% to 100%. Given these academic achievements, it is fair to conclude that Harrison was able to effectively use DE as a means to enrich his HS studies. He described the influence DE courses had on his PS studies and ambitions:

Initially I had hoped to be a pharmacist. What turned me interested into becoming a pharmacist was the chance to take several chemistry courses through the old [TETRA] distance education system. The chemistry courses were really well structured and prepared me quite well for any chemistry courses I did in university.

However, Harrison is unique among the former DE students of Hermitage Bay (HB) schools because his PS career led to a B. Ed. degree, employment in his former school, and assignment of duties to locally coordinate CDLI courses. He was asked to compare TETRA and CDLI teaching and learning:

Distance education teachers, from the time I was a student up till now, their teaching methods were more of a direct instruction type of approach. We were given some independence when it came to doing assignments, or work samples, or labs; but when it came to labs they were usually supervised by the principal of the school. I don't think there has been a lot of change from the old system as compared to now. It seems like there is still quite a bit of direct instruction. Now it's not the same as when you're in a classroom environment where you've got a teacher in front of you using the board. [Students] have to

be responsible enough to be in front of the screen and paying attention at all times, otherwise [they] will run into difficulties.

As a teacher responsible for CDLI courses today, and looking back at his TETRA DE experiences, Harrison Rose would like to see very few if any significant changes made to the way CDLI is currently administrated.

My biggest concern today, even as it was when I was a student, is supervision during online class time. ... The challenge for supervision is that oftentimes teachers are expected to supervise during their own prep periods. A problem with that is that if a teacher helps supervise, when does the teacher get time to complete their [preparations for] their own classroom. It's just not possible. The only other change I would like to see incorporated into the distance education system would be use of the polycom. Not only so that distance teachers could actually see the kids and put names to faces, but it could also be used as a supervision tool. A teacher could sign on every morning to the schools just to see if all students are attending classes.

Harrison's concerns about supervision are echoed in the comments of a former DE student who graduated from St. Peter's All-Grade (SP) in 1993. She raised the issue of student classroom conduct.

We probably didn't take it as serious as probably we should have. I think we kind of thought because there wasn't a teacher in the room with us at all times we could sometimes use that period to goof around a little bit. ... Looking back at it now, if we had taken it a little more seriously we could have done a whole lot better and learned a whole lot more. ... The potential was there for it to be really good and a really good learning experience.

However, despite any such concerns, this former DE student successfully achieved an "A" grade in physics 2204, the only science course available to her in HS, and continued her education into PS by completing a Certificate in Criminology and a B. Sc. Honours Degree in Psychology from Memorial University of Newfoundland (MUN). During the interview, she spent time reflecting on the value of DE and the opportunities open to students today.

I wish I had had the opportunity to do more distance education courses because when I went to MUN and did ... biology and chemistry, it ended up that I had to do a non-credit chemistry course. I did four or five biology and it wasn't until I went to MUN that I realized that I love biology ... I had to work really hard because I had to do biology and chemistry with no background in it from high school. I probably had to work twice as hard as the person sitting next to me because they probably had a few biology courses under their belt and I didn't. ... I wish that I could be in school now and have the opportunities they do now.

However, a second former DE student from SP, and a classmate of the previous student who achieved a "C" in her online course, would not choose to repeat her experiences. Despite the anonymity of DE classes, she felt that it was stressful to have to answer questions online among people you could not see and did not know. She felt more comfortable in traditional classes where the teacher was readily available and classmates were, if not supportive, known.

If I had a choice I would have done physics in class. I felt it [was] more comfortable working in class. You knew all the students whereas when you were working online you didn't really know all the students. If you had a problem in class you had your teacher right there to help you. You knew your teacher better whereas online you only get to talk to your teacher a couple of times a week, and if you had a problem you felt uncomfortable asking him for help where you didn't know him that well. ... Being on-line I felt was more stressful.

These feelings were not unique, as one former VA student explained: "I did some post-secondary school. I also did not do any DE because I felt I wanted to be hands on in classroom with the teacher."

However, a third former DE student from SP enjoyed her DE experience. She graduated in 1999 with a 79.7% average in six TETRA courses: the chained math courses 1201-2201-3201, the chained chemistry courses 2202-3202, and physics 2204. In a telephone interview she commented that "I enjoyed chemistry the most. I really liked the teacher and the labs. Everybody took physics. Advanced math was described as essential for MUN." After graduating HS, she attended MUN and entered a B.Sc. (biology) program. She dropped out of her PS program after two years but described her HS DE courses as essential:

Distance education courses helped “big time.” First year chemistry courses at MUN were similar to high school distance education classes. Second year chemistry at MUN was different. If I hadn’t taken high school DE I probably wouldn’t have done as well as I did. I completed a physiotherapist assistant program at the College of the North Atlantic [CONA] from McCallum. It wasn’t so difficult because I was already used to DE. ... If DE was cancelled it would be missed, especially at our school. It’s the only way students can get an education. I would like to have been able to have done biology and French. ... I could have handled DE as a junior high student.

These five former students, four of which took HS DE courses, express a range of opinions on the value of DE. Two preferred not to take online courses. Three stated that their DE experience was beneficial because they were able to complete necessary courses and pursued PS studies based on HS course work. Two of these three regretted the unavailability of more course choice during their HS years. One of these three achieved a B. Sc. Honours degree and completed a thesis entitled *Extroversion, Introversion, and Levels of Stress*. Another was able to use the information and communications skills she had learned as a HS DE student to complete a CONA certificate from McCallum. Another teaches HS locally and coordinates the administration of CDLI DE courses.

Distance Education, as Seen by School Administrators

One of the major goals of this research was to capture the viewpoints of school administrators with respect to aspects of distance education (DE). To this end, semi-structured interviews were conducted with Mr. Derek Drover, the principal of Victoria Academy (VA), Gaultois; with Mr. Guy Nash, the principal of St. Peter’s All-Grade (SP), McCallum; and Mr. Jonathan Skinner, the principal of John Watkins Academy (JWA), Hermitage-Sandyville. Each of these principals is a collaborator in this research and has generously provided after-school time and data access as stipulated by the Nova Central School District (NCSD).

School principals were asked a series of eight questions developed by the author. These questions concerned their: (1) personal experiences with DE; (2) understanding of the DE history of their school; (3) knowledge of former students’ post-secondary (PS) and career choices; (4) viewpoint on enrolment trends and preferences; (5) opinion of the administration of current and former DE courses; (6) opinion on the quality of online teaching and learning; (7) opinion on the impact of DE courses on the workload of onsite teachers and administrators, and (8) vision of school needs which could be addresses when the future of DE is discussed. Some of these opinions have been integrated into previous sections of this paper. This section will focus on personal experiences and opinions with respect to DE administration, online teaching and learning, the onsite workload, and future directions.

Personal Experiences with Distance Education

Of necessity, the first question asked in any research should validate the ability of respondents to develop informed opinions about the topic in question. Each school principal was asked about course availability during high school and any DE experience they may have had. Derek, for example, completed his HS at Ascension Collegiate, Bay Roberts, and the courses he needed were readily available in school. However, he has recently completed “the bulk of the courses” for his M.Ed. online.

From having first hand experience as a school principal and teacher in managing the operations of our own student’s distance education program, and also having used it myself in the learning process at the post-secondary level, I can certainly speak to the benefits of such a program. ... I appreciate what such technology has to offer to education and learning in general. ... [DE] made it possible for me to continue working and to obtain a degree from home.

Guy, a former student of The Happy Blackbird School in Furby’s Cove, graduated from HS in Hermitage in 1976 before DE was available. “But courses then, there was little to choose from. There were a limited number of teachers and only a certain number of courses offered. ... The only course I ever knew of as a science other than science was biology ... To me that gave me a drawback to getting a job.” After

completing his B. Ed., Guy moved to McCallum in 1981 to teach and became the school principal in 1994. Recently, he completed his Master's Degree online. "The benefit for myself from ... the distance education equipment is that when I did my Master's program through MUN I did online courses."

Jonathan, a former student of Conrad Fitzgerald Academy, English Harbour West, also described his high school course options and personal experiences with distance education.

What I remember about my days was that we had great teachers, but we didn't have a choice of to-do subjects such as physics or chemistry, or advanced math. Now, had these choices been available I may or may not have enrolled in them, but being a math teacher now I probably would have liked to have done physics or an advanced math course as well.

I have had first-hand experience with distance education because I completed my Master's Degree from Memorial completely through distance education. I have an idea of how the students feel when it comes to handling distance learning because, in the beginning, for myself, it was ... something I was apprehensive about. ... but after a little bit of time I got used to it and found it to be very beneficial.

Hence, each of the three collaborating school principals has recently completed their Master's of Education (Leadership) degree from Memorial University of Newfoundland (MUN) using the current DE technologies. Each can claim to have been a *distance education student* who completed greater than 25%, and indeed greater than 50%, of their program through online courses.

CDLI Administration of Distance Education

Derek and Jonathan, although having taught at their respective schools since before the start of DE in the province, were not directly responsible for DE in their schools until they became principals. They were not assigned DE responsibilities as a teacher because someone else on staff with a computer or technology background was able to fulfil that role. Hence, their experiences with DE administration have been as principals responsible for their schools since the advent of the CDLI e-learning model. Guy, on the other hand, as a school principal of a smaller staff, has worked with DE administration under both the TETRA teleconferencing and CDLI e-learning models. He has also had to assume responsibilities which, in other schools, would have been assigned to a teacher with a technology background.

Derek describes CDLI administration as *accommodating and student-focused*. "I'd have to say that I consider it a collaborative approach that is definitely student focused. ... Management has been very accommodating. Their goal has always been "what can we do to accommodate the student." ... I must say, from that perspective, I think the system has worked quite well." Guy echoes these sentiments:

I think the way CDLI is administrated is great. There's a great working relationship between the teachers and the principal of CDLI, and the administration of schools ... Like when it comes to exam time, the exams are always out before hand ... reporting dates are available. You know when they are going to be reporting. ... If you're in a situation like I am you have to wait for the CDLI schedule and what courses are being offered before you can actually do up your school timetable. ... There have been times when I've had trouble, even with a small number of kids, fitting courses into time slots. I've had to go back to the administration of CDLI and ask, "Can I put student A in slot B instead of keeping him in slot C?" and they've always been really accommodating.

Opinions of Online Teaching and Learning

Derek, Guy, and Jonathan are all *teaching principals* in small schools. The allocation for administration at VA is $\frac{1}{4}$ of a unit, for SP is zero units, and for JWA is $\frac{1}{2}$ of a unit, which is shared between the principal and the vice-principal. Hence, these school principals spend the majority of their time teaching in the classroom and may better be described as fulltime teachers with additional administrative duties. On top of that, Derek and Guy teach in multi-grade classrooms and all three principals teach multiple courses simultaneously. Regardless of how they are described, they remain in touch with the needs and aspirations of their students and attempt to keep pace with advances in teaching methods and changes in provincial curricula.

By the time CDLI was piloted in 2001-2002, the students, parents, and administration of VA had developed concerns about DE and were questioning the ability of online teachers to be able to deliver effective course instruction. No students had been enrolled in DE in the previous two school years, despite the fact that during 1997-1998 and 1998-1999 school years nineteen of the twenty marks achieved by DE students were “A” or “B” grades. As Derek explains:

It was really because it was new technology, a new way of teaching courses, and there were some concerns about whether students would adjust and master the use of the new technology, and really have the independence to achieve success in their courses without actually having a teacher, may I say a *real teacher*, in the classroom, rather than a virtual teacher.

Today, after five years of successful student academic achievement, the story is different. Students have become very comfortable using the CDLI technologies and teachers have come to accept that the quality of online instruction is very high. Derek has concluded that not only are students mastering curriculum outcomes, but they are developing their learning and collaboration skills:

I believe, from observing students on a daily basis and from year-to-year, our students have learned to become independent learners, and they’ve learned to rely on each other, and to use the system to maximize the benefits that the system has to offer. As far as the quality of teaching that CDLI offers, I think that it’s *top notch*. I think that the students receive very good instruction. And again it’s not only mastering the outcomes which students are learning and teachers are teaching, but it’s also the other benefits that they are receiving. When our students move on to post-secondary and into their work life and so on, whatever careers and directions they choose in life they’ve acquired amazing skills in the use of technology and learning to work independently as they move on from our system and out into the job market and post-secondary. There’s benefits all round.

Guy has come to similar conclusions about the CDLI e-learning model and the quality of online teaching.

I think the quality of the teaching is excellent. I don’t think there’s any better you can get anywhere. CDLI have recruited, from the knowledge and association I have with them, the best quality teachers they can get. These teachers are really great, and I’ve said over and over when I’ve met with different people that I consider distance ed teachers almost like, well they are part of my staff. If there’s an issue for a student I can contact the teacher; if there’s a problem, the teacher is always there to help the students. Whether you give them a phone call or send them an email there’s always a reply back. The quality is just nothing but excellent.

An argument I used to get one time is that having distance education is not the same as having a teacher in the classroom. I would disagree with that because I think that when you are online with an instructor you are like being in a classroom. ... If you are a regular instructor in the classroom, do you talk all the time? Do you lecture all the time or do you provide time for students to work on their own? So, when you look at it, is CDLI any different? When [students] are doing their online classes on their own [is that] any different than sending your students to the library to do a research paper?

Jonathan suggests that a student’s *approach* to learning, drive, determination, and motivation to succeed are significant factors in achieving academic success in DE courses. “Students have to be highly-motivated; students have to want to succeed.” According to Jonathan, when he has asked students, there are still those who will not take the course if it is offered through CDLI. He believes some students are not ready to accept the responsibility for keeping up with the work and that these students need the daily prompting from a face-to-face teacher about notes, assignments, and review for tests. “I’m very certain that the majority of students will tell you that they would prefer that face-to-face contact.” Despite his certainty that most students would choose traditional classes if asked, Jonathan does believe that those who do well in DE courses master a *work ethic* which does them well in PS studies.

We have had a lot of students who have had a very, very high rate of success with CDLI courses. And I did have a CDLI teacher tell me one time that ... university professors speak highly of students who come out of my school and who have done CDLI courses because [those students] have a much better *work ethic*. They know the level of independence and they know the level of effort they have to put into a course to be successful.

Opinions on Onsite Workload Associated with Distance Education

Derek, Guy, and Jonathan all speak of the benefits to students of having access to high quality online courses and teachers; and they also agree that being a *distance education school* involves accepting certain administrative and teaching duties. As an example, during his interview Jonathan described in detail how his role in determining onsite course offerings and teacher scheduling was influenced by CDLI decisions.

From an administrative perspective, ... preparations for the upcoming school year begin ... [with] pre-registration of students in [CDLI] courses. Just this morning I was in with the grade nines [to see] if they'd be interested in continuing their study of French ... After a period of time the actual registration process will take place [and] I'm going to need to have my level one, two, and three program tentatively outlined ... When my students are all registered ... we will wait for ... the course slots ... [and] then we go to work on our school timetable ... If one student in level one is doing French 2200 through CDLI and the other student is doing writing here at the school, then I've to make sure that my French and my writing are offered in the same slot. That may sound very easy [and] for one course [it may be] but we have nine maybe ten CDLI courses and that ties our hands when it comes to scheduling ... and it becomes a challenge when we have teachers teaching high school in levels one, two and three, and [some of these] teachers also teaching in grades seven, eight, and nine.

Derek listed what he saw as the responsibilities at the school level to ensure that the system "runs smoothly for students": general troubleshooting, supervising of off-line classes, supervising of exams, scanning and sending student work." Harrison Rose coordinates this work at VA through a CDLI *M-team*. CDLI has taken the position that the duties Derek listed can be shared at the school level by a trained team of mentor teachers, or M-team. Jonathan described the role of the M-team at JWA, where it consists of five teachers each assigned responsibility for two DE courses based upon matching the course with a teacher's area of expertise. At SP, Guy is the M-team. Guy also described the role and duties of a school M-team, including the necessity to spend time with students after school to facilitate science labs.

A little bit of time has to be spent on scanning student exams and getting them off to instructors; however, I feel it's not a great burden based on what you get back from it in return for your students. I think it's a really good situation that's not an over burden for the schools, and the instructors are pretty reasonable with the exams and getting them out to you.

In the past five years, per year, VA has consistently offered 5-6 DE courses and course enrolments have ranged between 13-22 students. SP has offered 6-13 DE courses and course enrolments have ranged from 8-15 students. JWA has offered 8-10 courses and course enrolments have ranged between 27-28 students. The higher number of DE course enrolments at JWA may have resulted in DE being perceived there as an additional workload on teachers. However, it may also be the case that it takes extra effort at a school to coordinate an M-team of five teachers as opposed to one teacher assuming the responsibility.

School Needs and Future Directions

During interviews, principals were asked about school needs associated with distance education and asked to make suggestions on how the current DE system could be improved. Derek and Jonathan suggested that time, perhaps part of unit, be allocated to schools to facilitate the administration of DE courses. Jonathan doesn't believe that offering DE has benefited local teaching staffs.

All of our teachers have five prep periods over a fourteen day cycle. So there are a number of days when I'm teaching throughout the day, teaching every period of the day, and on those same days I will either have a corridor duty scheduled or a lunch duty scheduled; and then, throughout the year on a number of occasions on those same days, I'm going to have to be responsible for administering and supervising a CDLI exam, collecting it and getting it back to the e-teacher.

School principals were given two scenarios during their interviews of possible changes in the organization and programming of CDLI. The first scenario suggested a diminished presence, or possibly the disappearance of CDLI while the second scenario suggested an increased role, possibly through extending programming into the junior high grades. The general consensus was that DE students would be best served

if CDLI changed very little. For example, Gus Jones, the principal of JWA from 1999 to 2004, stated that CDLI met the needs of students and schools very well. “It should stick to what it does best and accept change very slowly.” Guy echoed this sentiment in saying:

Hopefully, it will continue like it is now ... I think the program as it stands right now is good. Without it, I don't think schools like mine will ever see graduates again. ... I think it's *a God send* for small schools in situations like mine. It gives the kids the proper education they need to handle any post-secondary institution.

But in order for it to work, in order for it to be successful, everybody [has to be] on board: CDLI instructors, [school] teachers, administration, parents and students. Everybody has got to take a positive attitude towards it and do the best they can. ... You have to encourage the students to give it a try. Parents have to do it and us, as teachers, too. ... I think that if you looked at some of the [distance education] students and where they came from, you would find that the successful students are coming from backgrounds that have everybody on board and everybody working together.

Conclusions

The number of Hermitage Bay (HB) communities with schools has been reduced from twelve to three since Confederation. In the 1960's, schools closed in the coastal communities of Great Jervis, Muddy Hole, Piccaire, Pushthrough, Richard's Harbour, and Stone Valley as people migrated or were resettled to larger centres. School closures and the loss of community services forced resettlement of the remaining population and these communities ceased to exist. Similarly, schools were closed in Furby's Cove, Grole, and Pass Island in the early 1970's after a trunk road connecting Hermitage Peninsula communities was connected to the Harbour Breton Highway. Shortly after the road was completed, high school students were bussed to larger schools and this practice quickly led to the transportation of all students from smaller communities. The subsequent closing of community schools was a major factor in the disappearance of these smaller communities. In hind sight, bussing and boarding can be seen as forms of distance education in which students instead of information were transported over distances.

Distance education (DE), as communication of information over a distance, has benefited students by providing access first to advanced math, science, and French courses; and more recently a wider variety of HS courses. It is no longer necessary for students to leave their home community to achieve a HS education. The majority of HB students who have taken DE courses to enrich their HS program have taken four or less courses. However some students have taken more than 25% of their HS program through DE and the term *distance education student* is better reserved to refer to these students.

Schools can be characterized by the percentage of HS students who take DE courses, the percentage of total HS enrolments which are in DE courses, and the percentage of HS course offerings which occur through DE. A school with a hand full of students taking a few courses is not a DE school but a school with a supplemented program. The term *distance education school* is better reserved for schools dependent upon DE, such as schools with greater than 25% of their students taking DE courses or schools which offer more than 25% of their program through DE.

The effectiveness of DE systems in delivering HS programming has been proven based upon the high number of students who have passed DE courses and the relatively high number of A's attained. It can also be concluded that CDLI has successfully broadened the scope of DE in the province based on the wider variety of course offerings delivered by CDLI and the relative stability of course grades across the TETRA and CDLI DE systems. In addition, given that TETRA DE has been characterized as offering students *advanced-level* courses while CDLI DE has been characterized as offering students a combination of *advanced-level and academic-level* courses, student achievement data proves that CDLI has successfully included students with a wider range of academic backgrounds.

Anecdotal evidence suggests that 87% of HB students who had taken at least one DE course pursued post-secondary (PS) education after graduating from HS. A high number of these, 89%, have completed or are still enrolled in their programs. The success rate of the graduated students who did not take a DE course has

not yet been determined. However, based on judgement of the relevance of curriculum outcomes to the curricula of PS programs, seventy of the 110 students (64%) who pursued PS education chose pursuits related to their HS DE course enrolments. This value appears to be significant given that most of these students took less than 25% of their program through DE.

Four former students were interviewed in this research, all of whom clearly stated the need for HS DE courses to enable students to have choices in their course enrolments. Three of the four students enjoyed their DE experiences while one student expressed her preference for traditional classes. This sample was too small to draw any conclusions with respect to student opinions concerning DE; however these interviews did uncover an important issue. The two former students who were most successful in their PS studies suggested that student attitude during classes and onsite supervision of DE classes was a concern. These sentiments were echoed by a school principal who has observed that student work ethic is a predominant factor in student success.

School administrators and teachers who have used DE as part of their professional development or to pursue personal goals have a knowledge of online teaching and learning which can be beneficial to HS DE students. They are in-touch with *the realities and subtleties* of distance education.

CDLI administration and teachers have been described as *student focused* and willing to work to accommodate the needs and desires of students as those needs are expressed through the requests of school administrators. CDLI administration and teachers have been described as *collaborative* and interested in building strong working relationships with local schools. The quality of online teaching has been described as excellent and online teachers have been described as *the best teachers available*. One principal stated that he thinks of CDLI DE teachers as if they were part of his staff!

All three principals have described student DE experiences as achieving more than the completion of curriculum outcomes. One principal has concluded that students are developing their learning and collaboration skills through DE. He believes that DE has been responsible for students acquiring “amazing skills in the use of technology and learning to work independently ... which benefit them as they move on to PS studies and their careers.” Another principal described a conversation with a CDLI teacher in which he was told that students from his school are successful in PS because they have developed “a much better work ethic” and because “they know the level of independence and they know the level of effort they have to put into a course to be successful.”

There is a local workload associated with offering CDLI courses to students. That workload includes supervision of online and offline classes, facilitating after-school science labs, keeping in contact with e-teachers to monitor student progress, administrating and invigilating tests and exams, and creating school schedules which facilitate CDLI course offerings. Principals at Victoria Academy and John Watkins Academy have established *mentor or M-teams* to share these responsibilities. At St. Peter’s All-Grade, this work is completed by the school principal. There appears to be a difference of opinion as to the amount of work involved in hosting CDLI DE courses and, depending upon how this work is perceived, the need for a partial allocation to cover CDLI duties.

The school principal who more easily accepted the extra duties suggested that he would prefer that any possible extra allocation be assigned as teaching staff because of the importance of giving students the best quality education up to the point where they could avail of DE courses.

We cannot use distance education to take away our staff. I’ll use French as an example. Our students have been really successful in [online] French courses. The person graduating now and the person who graduated last year have completed three [high school] French courses. That’s remarkable considering [these] students have completed their French in a grade four to nine classroom. ... We combine grades four, five, and six; we combine grades seven and eight; and we do the grade nine. That’s three French courses going on at same time. It’s amazing what these kids have done and I would tap the [onsite] teachers I’ve had over the years on the back for the job they have done. They move our students along to CDLI, where [students] are taught by experts in their field. ... The teachers in CDLI are able to take [students] on to the next step.

The success of DE in HB schools is obvious. The success of CDLI in providing access to quality online courses is also obvious. The achievement of students, teachers, and administrators based on the high percentage excellent marks attained in DE courses needs to be recognized. The impact of the DE experience on graduates' PS program choices, completions, and careers must also be recognized. Unfortunately, on the road to success, many small communities have disappeared. It must be asked, if DE in its current form had existed at the time of Confederation, would people have resettled? The communities of Gaultois, McCallum, and Hermitage-Sandyville are struggling today to find just that answer.

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Acknowledgements

We would like to thank all the participants who agreed to be interviewed during the course of this research; especially Phyllis Harris, Brenda Fudge, Harrison Rose, and all the former students who participated. Interviewees, except school principals, were guaranteed anonymity prior to the interview process. Phyllis, Brenda, and Harrison agreed to be identifiable because of the uniqueness of their contributions to this research.

We would like to thank the Nova Central School District for their consent to conduct this research at Victoria Academy, St. Peter's All-Grade, and John Watkins Academy.

The author would also like to thank the Killick Community-University Research Alliance, and its principal investigator Dr. Jean Brown, for financial support during the course of his doctoral studies, and for financial support to cover travel costs to Hermitage Bay to conduct this research. We would also like to thank the Killick Centre for access to the provincial government database project and the ability to cross-check school records.