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What are They Doing and How are They Doing It? Rural Student Experiences in Virtual Schooling

Michael K. Barbour and Janette Hill

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Abstract

This qualitative study examined a Canadian virtual school learning experience for students and the kinds of support and assistance most frequently used and valued by students learning in a virtual environment. Students were interviewed and observed during their virtual school classes. In-school teachers were also interviewed and online teachers were also observed. Data were analyzed using the constant comparative method. Findings indicated that during their scheduled asynchronous class time students were often assigned seatwork or provided time to work on assignments, however, students rarely used this time to complete virtual schoolwork. It was during their synchronous class time that both the students and the online teachers were most productive. Students sought assistance from local classmates before turning to their online teacher or in-school teachers, and did not use the other support systems provided by the virtual school.

Résumé

Cette étude qualitative a porté sur une expérience canadienne d'apprentissage pour les élèves en école virtuelle ainsi que les types de soutien et d'aide les plus couramment utilisés et prisés par les étudiants qui font des apprentissages dans un environnement virtuel. Les étudiants ont été interviewés et observés pendant leur cours virtuels. Des enseignants travaillant à l'école ont également été interviewés et des enseignants travaillant en ligne ont aussi été observés. Les données recueillies ont été analysées à l'aide de la méthode comparative constante. Les résultats démontrent que pendant leur temps de class asynchrone déterminé, les étudiants se faisaient souvent donner du travail individuel ou donner du temps pour travailler à leurs devoirs. Toutefois, les étudiants utilisaient rarement ce temps pour effectuer des travaux scolaires virtuels. C'était durant leur temps de classe synchrone qu'à la fois les étudiants et les enseignants en ligne étaient les plus productifs. Les étudiants faisaient appel à l'aide de leurs pairs locaux avant de recourir à leur enseignant en ligne ou aux enseignants travaillant à l'école et ils n'utilisaient pas les autres systèmes de soutien fournis par l'école virtuelle.

Introduction

Rural areas have historically been undervalued in many parts of the world. Cosby and McDermott (1978) indicated there was a perception that those living in rural areas represented "a small and insignificant segment of the population" of the United States (p. 6). The authors speculated this was due to the urban dominance in matters of politics and commerce, along with a general shift in the population from rural to urban areas. These observations are particularly true of the Canadian province of Newfoundland and Labrador. In this sparsely populated province, 178 of the 279 schools in 2009-10 were located in rural areas (Government of Newfoundland and Labrador, 2010) and 85 were designated as necessarily existent. [FN 1](#)

As with other rural jurisdictions across North America, many of the schools in Newfoundland and Labrador do not have enough specialized teachers or are unable to provide sufficient variety in their course offerings required by the provincially mandated curriculum. In this environment, rural schools

are unable to offer their students the same level of educational opportunity as their larger, urban counterparts. Beginning in the late 1970s, a variety of government reports outlined these problems (e.g., Crocker & Riggs, 1979; House, 1986; Riggs, 1987). In response to the recommendations in these reports, the province began implementing distance education programs for rural high school students in 1988. Since 2001 this program has been delivered through a province-wide virtual school known as the Centre for Distance Learning and Innovation (CDLI).

The purpose of this study was to investigate the virtual school learning experience for rural students in the CDLI and the kinds of support and assistance that were most highly used and valued by these students. The importance of this study stemmed from the fact that while previous studies have examined the types of secondary students attracted to virtual learning, and other studies attempted to compare the performance of students in virtual schools with that of students in traditional schools, few, if any, researchers have undertaken a comprehensive investigation of students' experiences in virtual schools.

Literature Review

Historically, many of the early examples of distance education programs in high schools across North America were primarily designed for students with higher aptitudes, higher achievement, and greater aspirations for post-secondary education (Mulcahy, 2002). For example, in their second-year evaluation of the Virtual High School Consortium (VHS), Espinoza et al. (1999) stated the "VHS was serving a fairly narrow range of students, those who were academically advanced and college bound" (p. 48). The courses developed by the VHS illustrate this trend. For example, courses such as Advanced Placement Statistics, Environmental Ethics, and Russian, Soviet, and Post-Soviet Studies were designed and implemented in such a way that they excluded all but the most talented and motivated.

Research literature also substantiates this trend. Based upon a review of this literature, Roblyer and Elbaum (2000) concluded, "only students with a high need to control and structure their own learning may choose distance formats freely" (p. 61). For example, in his analysis of 2,600 student enrollments at a mid-Western virtual high school, Mills (2003) found the typical online student was an A or B student. This is similar to findings by other scholars (e.g., Bigbie & McCarroll, 2000; Watkins, 2005) who found e-learning opportunities were open to high achievers. Other scholars have also indicated that in distance programs where student selectivity is not maintained, retention rates decrease significantly (Ballas & Belyk, 2000; Barker & Wendel, 2001; Kozma et al., 2000; Roblyer, 1999).

These findings have led some to question whether online learning is suitable for all secondary-level students (Mulcahy, 2002). Several comparative studies have found that K-12 students in online learning environments perform as well or better than their classroom counterparts (Barbour & Mulcahy, 2008a, 2009; Cavanaugh et al., 2005; McLeod et al., 2005). In a meta-analysis of 19 studies investigating the effectiveness of interactive distance education technologies in K-12 education including over 900 participants from 1980 to 1998, Cavanaugh (2001) found there was "a small positive effect in favor of distance education" (p. 73). Similarly, more recent meta-analyses have reached similar conclusions (Bernard et al., 2004; Cavanaugh et al., 2004; Means et al., 2009). However, based upon the descriptions of the distance education student, difference in results between distance education and traditional classroom students may be largely explained by the selectivity of students registered in distance education programs. Based upon these examples and the current literature in general, it seems plausible the students described in many of the distance education studies were primarily the independent, self-motivated students who enrolled in the earliest forms of distance education opportunities in Newfoundland and Labrador and elsewhere in North America. It may also be that the students who would not have performed well in the distance education environment had already elected to drop the course before the outcome data were collected. For example, both Cavanaugh et al. (2005) and McLeod et al. (2005) speculated that their own positive results in favor of virtual school students were due to many of the low-achieving students dropping out prior to the assessment.

There has been a tremendous growth in virtual school opportunities over the past two decades both in numbers and in composition. Current estimates indicate there are 1,500,000 students enrolled in online courses in the United States (Watson, Murin, Vashaw, Gemin & Rapp, 2010), up from an estimated 40,000 to 50,000 less than a decade ago (Clark, 2001). The greatest level of growth has been with the full-time cyber schools (Watson, Gemin & Ryan, 2008), while Klein (2006) indicates that many cyber schools have a higher percentage of students classified as 'at-risk' – which increases the range of ability levels being served by virtual schooling. Barbour (2010a) speculated similar trends have occurred in Canada. Given this continued growth, it seems imperative to continue exploration of the virtual school experience and to discover how best to support students in these learning environments. However, to date there has still been little systematic research conducted into virtual schooling (Barbour & Reeves, 2009; Cavanaugh, Barbour & Clark, 2009; Rice, 2006) – and some of have even questioned the methodological reliability and validity of the much of that research (Barbour,

Methodology

The purpose of this study was to examine the nature of this virtual school learning in Newfoundland and Labrador's rural schools. Specifically, this study examined how students interacted with their virtual school courses and the process they undertook when they needed help. This general purpose lent itself to three research questions:

1. What are the students' experiences during their synchronous time online?
2. What are the students' experiences during their asynchronous time online?
3. When students require content-based assistance, where do they seek that assistance and why do they choose those sources?

Qualitative research methods were appropriate tools to examine the proposed research questions and a case study approach was selected. Stake (1995) described a case study as concentrating on one phenomenon, which possesses both "uniqueness and commonality" (p. 1).

According to Merriam (1998) "any and all methods of gathering data, from testing to interviewing, can be used in a case study, although certain techniques are used more than others" (p. 28). The use of multiple sources of data and multiple data collection methods allows researchers to triangulate themes that may emerge from the data (Patton, 2002) and to provide the rich description typically associated with qualitative inquiry. The data collection phase took place over a 6-month period and included a semi-structured focus group with students in January, monthly interviews with students from February to June and single interviews with teachers and administrators in May. The first author participated in 34 hours of observation of students during their scheduled synchronous and asynchronous classes from March to June. In addition, 31 hours of recordings of synchronous classes and 13 different asynchronous course management system classes were captured, and surveys were administered in May (for a complete description see Barbour, 2007).

The data from the focus group and interviews were recorded and transcribed, while the observations were captured using video recording and researcher's field notes. Data were analyzed using an inductive analysis approach, with the help of *Microsoft Word*® as a data analysis tool (see Ruona, 2005). Constant comparative method was used, an analysis technique that focuses on identifying categories and generating statements of relationships. As Ezzy (2002) described, the process of constant comparison is developing and identifying codes that can then be compared across the data. This approach involves scanning the data for categories and relationships within and between individual transcripts. Issues of validity and reliability were addressed using a variety of methodological strategies, such as triangulation and member checking. For example, the researchers were able to compare data provided during the student interviews with data given during the teacher interviews and with the video data captured during the observations of the students.

The Case and Participants

The CDLI offered its first courses during the 2001-02 school year with a limited number of enrollments in a pilot setting, and then opened access to any student in the province during the 2002-03 school year. The CDLI also developed a number of courses (such as Art Technologies 1201, Communications Technology 2104/3104 and World Geography 3202) that were popular or typically catered to an average or below average ability student. The student population of the CDLI now had the potential to include students of all ability levels instead of primarily focusing on advanced-level courses, as previous distance education initiatives had done. In addition to the expanded student population, the CDLI also used a delivery model that included both scheduled synchronous and asynchronous sessions for each of the courses it offered.

The rural school selected for this study was Beaches All Grade, [FN 2](#) a school with a student body of 126 students and a teaching staff of 15, during the 2005-06 school year. Because of this small enrollment, students at Beaches All Grade have accessed virtual school courses each year the CDLI has been in operation (see Mulcahy, Dibbon & Norberg [2008] for a discussion of the necessity, as opposed to the option, of rural schools accessing the services of the CDLI). During the 2005-06 school year, there were 12 students enrolled in eight different CDLI courses that formed a purposeful sample: one grade 10 student, five grade 11 students, and six grade 12 students. Eight of these students participated in the majority of the data collection; and data analysis focused on only these eight students (see Table 1).

Table 1: Student Participants

Pseudonyms	Gender	Grade	From	Course Taken
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Jasmine	Female	10	Cape Random	Fine Arts FN3
Justine	Female	11	Beaches	Language Arts FN4 / Mathematics / Science
Constance	Female	11	Beaches	Language Arts
Jason (D)	Male	11	Clarke's Bay	Language Arts / Mathematics
Mya	Female	12	Beaches	Language Arts
Max	Male	12	Beaches	Language Arts / Mathematics / Science
Kathy	Female	12	Cape Random	Language Arts / Mathematics / Science
Peter (PJ)	Male	11	Beaches	Mathematics / Science

Some of these students were enrolled in the same courses, which formed a school-based or local group of classmates. However, as an online class, these students also had classmates in their online courses from other schools throughout the province and their online teacher was also in at a remote location. The participating students were a diverse group of individuals – ranging from university- or college-bound to those heading into a trade or directly into the work force upon completing high school. In addition to data from the eight students, interviews were also conducted with four school-based teachers and administrators at Beaches.

Results and Discussion

At the conclusion of the data collection, the researchers had conducted one semi-structured focus group with three students, four monthly semi-structured interviews with each student (total = 32), 62 hours of video recorded participant observation, analysis from 13 asynchronous courses, and four surveys from each student (n = 32); in addition to data from Beaches teachers and administrators. The findings and discussion are organized by the research questions.

Research Question One: Students' Synchronous Experiences

A wide variety of instructional approaches are typically encountered if you observe ten classroom lessons face-to-face or online synchronously. The students' synchronous time was also where most of the instruction actually occurred; scheduled asynchronous "instruction" was similar to what one would expect from an independent study environment (see Greenway & Vanourek, 2006 for an example). There were also many similarities between how students described their synchronous class time and how we might expect them to describe their experience in a traditional classroom. For example, most teachers have likely had a student who would describe their experiences in their class as "just sitting there and listening to the teacher" (JD). While not a very active form of participation, JD did describe in a later interview a more active participation, "if he [the teacher] says something important, I just flip back up to the screen and see what he is writing up and then write up what he's writing up or prints [*sic*] it off." In fact all eight of the students described some form of active participation, at least for a portion of their synchronous classes.

The descriptions were consistent with what might be expected of activities in a traditional classroom. For example, it was common for teachers to use the electronic whiteboard in a manner similar to the way they would use a traditional whiteboard as a space to diagram new concepts being introduced to students (see Figure 1).

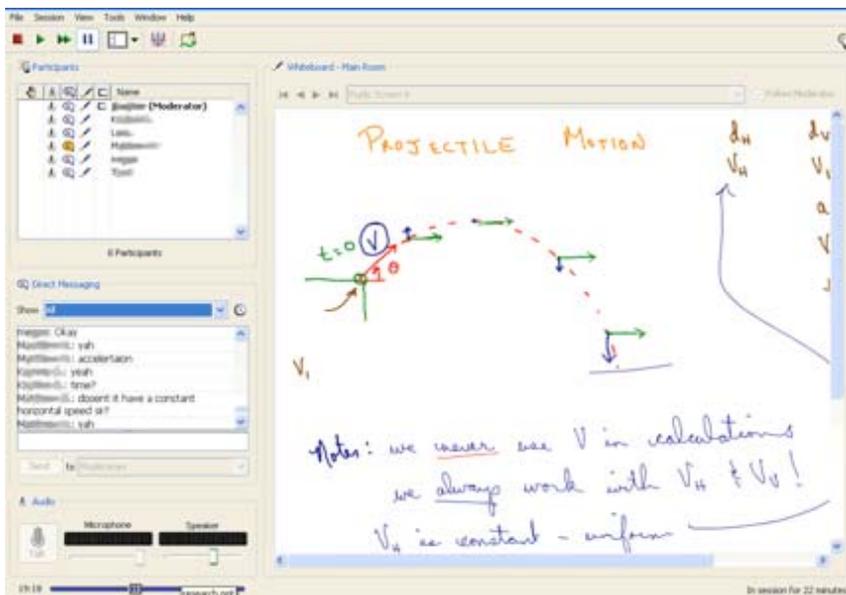


Figure 1. Example of a teacher introducing a new concept on the electronic whiteboard.

In this example, notice that the students used the direct messaging area to ask the e-teacher questions and he addressed these questions as he introduced the concept. Similarly, Jasmine described one of her synchronous fine arts classes as “he was teaching us stuff about balanced art, so he was getting us to answer some questions [on] which art was balanced and the different types.... We had to find pictures that had, like different types of balance.”

The synchronous sessions were also times when the students demonstrated the most engagement. For example, Max described the need for this strategy in the virtual environment as:

There’s just not an actual teacher there to look at them [*sic*] and, you know, to look at them [*sic*] sternly and now that they got to pay attention and they will, but in [Elluminate] Live all you got to do is a check mark every now and then to see if you are paying attention.

One of the reasons e-teachers and their students made effective use of their synchronous time may have been because of these similarities to the traditional classroom environment. According to Surrey and Ely (2007), a person is more likely to use something new if it “offers them a better way to do something; is compatible with their values, beliefs and needs; is not too complex; can be tried out before adoption; and has observable benefits” (p. 106). The virtual classroom utilized by the CDLI in this study allowed teachers and students to interact in ways that were compatible with the traditional classroom.

However, the data indicate that students were not always actively participating. For example, from the beginning to the end of one observed synchronous class session three language arts students talked about the school’s graduation, the up-coming school trip to the capital city, what had occurred the previous weekend, what they were going to do this coming weekend, their plans for summer break, the movie *The Breakfast Club*, school spirit, and many other topics rather than anything to do with the course for most of the 60 minutes class. During this conversation all three students were logged into *Elluminate Live* and one of the three students appeared to be responsible for paying closer attention, as she would periodically tell the other two to type this or click that. While this particular class may have been an outlier, at least based upon our observations, it was an illustration of the difficulties of the virtual environment for students who are being “compelled to assume a degree of autonomy they are not ready to handle” (Moore, 1973, p. 84). Based on observations of all 22 synchronous class recordings the amount of conversation between students was usually limited to 10-15 minutes out of a 60-minute class. Further, as indicated by data from the students themselves, they also felt that much of the conversation was focused upon the content of the synchronous class (see Table 2). [FN 5](#)

Table 2: Percentage of the conversation during synchronous classes about the subject area

Student	Interview #1	#2	#3	#4
Constance	50%	30-40%	25%	20-25%
JD	50%	40%	75-80%	40-60%

Peter	40%	80%	N/A	50%
Mya	75%	100%	100%	75%
Jasmine	95%	100%	100%	100%
Kathy	95%	90%	90%	50%
Justine	N/A	65%	25%/50%	10%
Max	90%	50%	50%	80%
<i>Mean</i>	<i>70%</i>	<i>70%</i>	<i>65%</i>	<i>50%</i>

The students in this study reported building a support community amongst themselves, which they utilized during their synchronous classes. A stronger sense of community is normally present in rural schools (Kannapel & DeYoung, 1999), which was also true at Beaches All Grade, and the students themselves used terms like “friendly,” “close knit,” and “family” to describe their rural school. For example, Mya commented “I know that over the last year we’ve gotten to know each other, umm through the course, but I would say like in person it’s like a tighter community amongst students.” The students all felt the smaller class size in their virtual school classes created a greater sense of community with their local virtual school classmates. Conrad (2002) described place-based communities, or communities physically together, as “like-minded groups of people [gathered] together in the spirit of shared goals” (p. 4). In this case, the shared goals focused on understanding the material their e-teacher presented. Cross (1998) believed a learning community fostered “active learning over passive learning, cooperation over competition, and community over isolation” (p. 5). CDLI students were quite active in their learning and cooperated to ensure everyone who expressed confusion understood the material. For example, students frequently asked each other content-based questions during synchronous class time.

While attempts were made to help establish a sense of community through e-teachers collecting pictures and background information on students to use during synchronous class sessions, a sense of community with students in their virtual class, not physically located at Beaches, did not appear to exist. Data indicated there may be several reasons for this disconnect; the most prominent was the use of direct messaging versus live voice chat. While students did occasionally use both, all but one student preferred to use direct messaging when given the choice. Most students preferred direct messaging because they were shy about speaking over the live voice chat or because they felt they did not know the other online classmates. “I just don’t like talking over the mic,” said Jasmine, while Justine indicated, “I guess I’m kind of shy using the mic.” This was consistent with Nippard (2005), who found CDLI students in the 6 courses he observed preferred to use direct messaging in their virtual classrooms.

A sense of community or a connection between learners is affected by several factors such as the level of social presence perceived by the learners (Gunawardena & Zittle, 1997; Tu, 2004). Short, Williams and Christie (1976) defined social presence as “the degree of awareness of another person in an interaction and the consequent appreciation of an interpersonal relationship” (p. 66). This also links to other influences described by researchers, including useful relationships (Tu & McIsaac, 2002) and emotional bonding (So & Brush, 2008). The data indicate that the CDLI students at Beaches still did not feel that their online classmates projected themselves in any way that fostered any meaningful relationship.

Research Question Two: Students’ Asynchronous Experiences

The Beaches data indicated only a small percentage of the instruction that was provided by the CDLI took place during scheduled asynchronous time. Overall, it appeared most CDLI e-teachers attempted to teach the complete content of their course during the synchronous time. When instruction did occur during scheduled asynchronous time, the students were typically assigned one of four activities by their teachers to complete:

1. questions about a reading or practicing new mathematical or scientific formulas;
2. work on up-coming assignments;
3. for science students, completion of hands-on laboratory work; and/or
4. for language arts students, reading of various assigned poems, short stories, novels and plays.

The students reported they were assigned a variety of work during their scheduled asynchronous class time, for example:

I was reading, I had to catch up with everyone else because we had to get the book read

before Easter Break and I only had a couple of pages, a couple of chapters left, so I read my book and finished that up, and we had to add to our notes, so I did that too, but I was done that during the first half hour of class. (Mya)

Along with time to read her novel and add to her journal assignment, Mya also reported her e-teacher had them respond to a discussion posting: "They'll [the e-teacher] put topics up and stuff and you have to respond to them and state your position to them, whether you agree or you disagree and why." JD, on the other hand, expressed his view more pragmatically:

Usually like you're assigned so many questions for each offline class and then at the end of the month or something like that, he'll want them all done...I usually waits until towards the end of that month and come home and get them all done.

The lack of actual asynchronous instruction, and the allocation of scheduled asynchronous class time for to mainly homework and assignments, often led to activities unrelated to the class. For example, Constance described that during her asynchronous classes:

I could just be talking to my fellow classmates, we could just be chitchatting about something, or I could be checking my e-mail, I could be on a friend's website, I could be, ahh, on a radio station site, I could be looking at song lyrics, or anything like that.

In some instances, off-task activities were due to the fact students had already completed their asynchronous work. "Sometimes we has [sic] nothing to do" (Peter) or "he didn't have any work assigned during that time, it was just that we were supposed to finish a novel over Easter break and I had it all done" (Kathy).

In some instances it was a conscious decision to stop working on their assigned activities, as Mya described, "I didn't really give myself any free time except for the last fifteen minutes of class.... Even if I'm not finished up, I'll still give myself fifteen minutes." Fifteen minutes of a 60-minute class was 25% of her asynchronous class time. Table 3 summarizes the percentage of time spent working during asynchronous classes as reported by the students in each of their interviews.

Table 3: Percentage of Time the Student was Working during Asynchronous Classes

In their analysis of the literature, Roblyer and her colleagues (Roblyer, 2005, 2006; Roblyer, Davis, Mills, Marshall & Pape, 2008; Roblyer & Marshall, 2002-2003) identified an internal source of motivation as one of nine constructs related to success in virtual school courses. Weiner (2003) also found motivation was critical to virtual school students successfully completing their work, their virtual school course, and to developing the responsibility necessary to succeed in this environment by participating in a structured online course. Most of the CDLI students' scheduled asynchronous class time was unstructured and students often had no work to complete or were able to complete work on their own at a later time. This might help explain why these students may appear to lack the discipline and self-motivation Weiner found to be critical factors for the students in her study.

Research Question Three: Students Seeking Assistance

The CDLI's intention was to maintain primary responsibility for student instructional support in their virtual school courses, rather than shift that responsibility onto the school-based staff. There was a concern that with the expansion of distance education in the province that even more responsibilities for and time engaged in instructional support, especially content-based, would be required of teachers working at schools that participated in this new virtual school. The CDLI instructed school-based personnel not to provide "regular instructional or tutorial assistance" (W. Sheppard, personal communication, April 23, 2001) to students enrolled in CDLI courses.

Recognizing these realities, the CDLI established a number of alternative methods for students to seek assistance when they required content-based support. The CDLI utilized provincial tutoring programs via Elluminate Live synchronous software and multimedia learning objects (MLOs) to provide additional explanations and presentations of the content. The CDLI also created a number of co-curricular activities that supported instructional missions. For example, the CDLI organized field trips and created a language club to support the French course as well as a province-wide math league for mathematics students (M. Barry, personal communication, May 19, 2006).

Contrary to the desire of the CDLI, most students did not use many of the resources provided by the CDLI. Students rarely or sporadically used the Elluminate Live recordings, the course content in WebCT, the e-tutors, the MLOs, the World-Wide-Web, their own notes, or their textbooks. None of the students knew what MLOs were during our first interview with them. While Peter later reported to using the MLOs on one occasion, his experience with them was less than favorable. No student indicated accessing the e-tutors provided by the CDLI. Instead, the students indicated using their in-school classmates, e-teacher, and in-school teachers for assistance.

Students relied on each other for a great deal of assistance. In the final interviews, six of the eight students referenced their in-school classmates as the source of assistance they found the most helpful over the past year. During synchronous class time, students indicated convenience was one of the reasons why they turned to each other. "I usually asks [sic] the students first, instead of typing it into the teacher" (Kathy). "It's more convenient, they can come over and actually show ya [sic], like work out a problem or whatever for like physics and math.... And they can actually do it on paper" (Justine). While Justine referenced convenience, the example she used also spoke to the usefulness of having someone physically available to work through a sample problem. In addition to the convenience and physical presence, students also relied upon their in-school classmates because of perceived ability to speak at their own level. Also expressed by three other students, JD said, "You can always ask them [the other students] to explain, because the students may explain it better" (JD).

During asynchronous class time, students reported their ability to collaborate as one of the main reasons they utilized their classmates for assistance. For example, as Peter described, "[we] helps [sic] each other and, like, we works [sic] on the same problem just like, you know, and if either one of us got like a problem, we just ask [sic] and, you know, just helps [sic] each other along." This was re-enforced by Max, who stated:

We all are working on our questions by ourselves and then, ah, ah, we figure it out and say everybody, everybody got the question done or whatever and if we got the same answer, we say alright then go on, but if we don't we'll get to together and figure out who went wrong where or whatever.

Mya described in one of her asynchronous classes, "we had a *Macbeth* assignment due last week when she [Dayna] was gone, so I printed off my answers and I was trying to explain to her what the questions meant."

Rovai (2002) described the communities that form in classrooms as " a social community of learners who share knowledge, values, and goals" (p. 322), while Wenger (1996) stated the learning that occurs in communities of practice is fundamentally social in nature. This may explain why the students found their in-school classmates so useful. Vygotsky (1978) described one of the differences between adult and adolescent learners: for adolescents, learning was a social process "in collaboration with more capable peers" (p. 86). For the students at Beaches, their classmates were their more capable peers and working together was the social process required to remain in each of their zones of proximal development.

The students in two courses appeared to extend this learning community beyond the confines of the school's distance education room. The students in one of the two mathematics courses (i.e., Justine, Peter, JD, and Norah) and one of the two science courses (i.e., Justine, Peter, Max, and Norah) met for evening work sessions on a frequent basis at one of the students' homes to prepare for an upcoming assignment or test relative to its due date. According to Max, these evening sessions first came about because their science course was "a harder course or something... and there's only four of us right, so it's no big deal for us all to get together." This was consistent with the rationale provided by Justine:

I guess we were all kind of new with the online courses and stuff, and real uneasy studying by ourselves, so we all suggested, well why don't we all get together for our assignments and stuff and help each other, so we just decided to, at the beginning.

Even though this was the fifth year Beaches had participated in the CDLI, and its seventeenth year in distance education, this was the first time these types of groups had formed (personal communication, M. McDonald, May 23, 2006).

In terms of the logistics of these sessions, Justine attempted to describe the scene:

We always get together around a kitchen table, ahh, at somebody's house and there's papers everywhere and books everywhere and we're just kind of like, all around a circle and going through our assignment or whatever together... we got everything sprawled out, papers everywhere and stuff like that, and, umm, that's about, about it, us talking about physics and math or whatever we're doing, sometimes we might have a little break and get a lunch or whatever, but usually always sitting around a table and doing it that way.

This was consistent with how all of the others described the work process, as opposed to a division of labor followed by copying each other's answers (which was asked of all the students on many occasions). For these students, their method of working together was truly a collaborative effort where everyone completed one question, then, they compared answers to make sure everyone got it right, assisted anyone with an incorrect answer, and then moved on to the next question. The students indicated they met one to two times a month. When they got together, they would spend an average

of three and a half hours together, half of which was on-task time as indicated by the students.

The students' use of their e-teacher as a source of support was dependent upon a number of factors. For example, if it was a synchronous class and a student wasn't able to get a response from his classmates, all eight students indicated they would simply ask their e-teacher. However, if the students were in an asynchronous class their patterns were a little more varied, from e-mailing their e-teacher (all students) to calling their e-teacher (five students). All but one student, Max, reported contacting their e-teacher by phone more than once during the term. Max reported, "every now and then we call him if we have [sic] any questions." The decision of how to contact their e-teacher, like many other aspects of their virtual school experience, was usually based on external factors. As Constance described:

I find that e-mailing depends on when your assignment is due, like, you might, if you like e-mail him a question, then you mightn't get it back for a day or two, though he's usually pretty good with that, he usually always checks it in case he do, but just say, I don't know, for example he don't for some reason and our assignment the next day, we can't get a hold of him, but like, he encourages us if we can't get a hold of him through e-mail to call, so we always, shouldn't have too big a problem if we really, really needs to get a hold of him anyway.

Basically, students chose e-mail when there was ample reply time available. If workflow was hindered, then calling was their chosen option for contact. While their inability to work past a certain point in their asynchronous class work was one of the reasons given for contacting their e-teacher, the most common rationale was a deadline. If there was an impending deadline (and possibly because of their poor use of their asynchronous class time), they called or tried to catch the e-teacher in *Illuminate Live*.

Unlike many of the schools that utilize the CDLI, the students at Beaches had access to content-based teachers at their school for all of their virtual school courses with the exception of the fine arts courses. The reason students had to take physics or French online was not because there was no physics or French teacher in the school, but because of the small number of students who expressed an interest in these specific courses. Therefore, students had access to an in-school teacher with subject area expertise in their virtual school courses. As Justine described:

Physics assignment last week, I asked, umm, Max or Norah... And, and they didn't know the answer so I went to Mr. Browning... Our science teacher... He said, it was on generators... And he told me that, he said that in our book, he said on, well, whatever the page was he said, cause he teaches physics, and he told me that, umm, it explained about generators in the book and he just gave me a little hint, like he said, umm, vertical and then he said something about the rule for vertical and he said, well, it's in our book, explained better, so he told me to go to my book.

All of the students indicated they would turn to their in-school teachers for content-based assistance. Students reported they sought out their in-school teachers between 46 and 54 times from the beginning of the school year until approximately the end of May, spending an average of seven minutes per visit.

While all of the in-school teachers, were willing to provide assistance when asked, some teachers expressed frustration with both the students and the e-teachers. Several issues were mentioned by the teachers, including interrupting class and coming for assistance without first checking course materials. For example, during our interview with Mr. Browning, he referred to the same incident that Justine described above.

...last time I remember they came was like half way through the, through a period and they were doing a lab then that they, for the third time, that they were, were supposed to do maybe in October, and they're doing it for the third time, half way through a period, couldn't get it to work, didn't know what was wrong with it, so... well, have you read these sections in the book yet, no, well, why not, well, we don't use the book, they don't look at the book, well, I'll say, I'll flick open the book and say, now take this section right here, read from page four seventeen to four twenty-two, done.

The teachers all indicated they felt this was due partly to the lack of preparation by the students and partly because their online teacher had not made it apparent the textbook or the course content in *WebCT* could be a specific resource.

Conclusions and Implications

The purpose of this study was to examine the nature of virtual school learning in Newfoundland and Labrador secondary education. To address the research questions, eight students engaged in CDLI

courses at a rural all grade school were selected as a convenient and purposeful sample. During the students' synchronous class time they were taught in much the same manner as they would have been in a traditional classroom. In fact, the majority of the instruction occurred during their synchronous class time. However, students rarely used asynchronous class time to complete their assigned CDLI seat work or assignments, instead they talked to friends, explored the Internet, or engaged in other off-task behavior. Students rarely or never used the other sources of support provided by the CDLI, instead they turned to local classmates, their e-teacher, and their in-school teachers.

The results of this study indicated that there were three main areas of CDLI instructional practices that need to be addressed, at least to improve the experiences of the students at Beaches All Grade. The first is the need to provide better instruction during asynchronous class time. If the students had more engaging and challenging asynchronous activities, there is the possibility that they would have used this time for more on-task behaviors (Davis, 2003). Several books have been written about strategies for engaging students online (e.g., Bonk & Zhang, 2008). Exploring some of these strategies to see what works best with the CDLI students may assist with providing more engaging and challenging instruction.

Second, CDLI e-teachers need to devise strategies that allow students to get to know their online classmates better in an attempt to develop a sense of community online (Hill, 2002; Hill, Raven, & Han, 2007). Conrad and Donaldson's (2011) work may be very helpful in that their model works to build a sense of community over time. Finally, there is a need for students to know of and to understand when and how to use all of the various sources of academic support that are made available to them by the CDLI (Hill & Hannafin, 2001). Providing an orientation for the students – along with refresher sessions – may help address this need.

This study was designed to be exploratory and to gain a better understanding of the online learning program at the CDLI. Based on the results, we identified three areas for future research for exploration: asynchronous teaching strategies; support for virtual school students and lower performing students; and developing a learning community with virtual school students. First, the students found asynchronous work routine and unchallenging, and often lacked the internal motivation to complete this work during the scheduled time. The lack of on-task behavior during their asynchronous class time meant much of the work assigned was completed at home, usually just before a deadline. Few studies have examined effective teaching strategies in virtual schooling, particularly asynchronous teaching methods (Cavanaugh, et al. 2004; Clark, 2007). More work is needed to ensure virtual school teachers have access to instructional strategies, particularly asynchronous instructional strategies, which have a foundation in research based upon theoretical fundamentals. Research studies that investigate the virtual school learning experience for lower performing students will aid teachers and administrators as this particular population of students continues to grow within virtual schools (Cavanaugh, 2007; Scherer, 2006).

Second, the number and range of students enrolling in virtual school courses continues to grow. However, the ability of virtual schools to support these students appears to be limited. The students in this study chose to rely upon their e-teachers and in-school teachers (along with each other) for assistance instead of taking advantage of built-in support structures. The question of what could have been done differently for this group of students remains unanswered. There were likely many factors that influenced the student-participants' online learning experiences. We continue to need additional research into the factors that affect student success in virtual school environments (Dickson, 2005; Roblyer, 2005) so that we can improve the experience for the students as well as the teachers.

Finally, the students at Beaches during the 2005-06 school year had developed a strong sense of community with their co-located peers, probably because of their shared goals and sense of cooperation when engaged in work. Examination of this particular learning community was beyond the scope and the methodology of this study. However, it warrants further investigation. Studies that consider how and why this learning community formed, along with why it did not occur in other courses at Beaches may produce useful information in helping to foster similar communities in other rural schools (Weiner, 2003).

FOOTNOTES

1. A term used to describe schools that cannot be closed because they are located so far from another school that it is not feasible to bus the students due to distance.
[BACK](#)
2. The name of the school and all participants are pseudonyms.
[BACK](#)
3. Fine Arts include courses in art and music.
[BACK](#)

4. Language Arts include courses in both English language arts and French as a second language.
[BACK](#)
 5. We also use the students' self-reported data here because the video recordings were not able to pick up all of the c that occurred within the distance education room, particularly when multiple conversations occurred at the same time
[BACK](#)
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References

1. Barbour, M. K. (2007). *What are they doing and how are they doing it? Rural student experiences in virtual schooling*. Unpublished Doctoral Dissertation. University of Georgia, Athens, GA.
2. Barbour, M. K. (2010a). State of the nation study: K-12 online learning in Canada. Vienna, VA: International Council for K-12 Online Learning. Retrieved from: http://www.inacol.org/research/docs/iNACOL_CanadaStudy10-finalweb.pdf
3. Barbour, M. K. (2010b). Researching K-12 online learning: What do we know and what should we examine? *Distance Education*, 7(2), 7-12.
4. Barbour, M. K., & Mulcahy, D. (2008). How are they doing? Examining student achievement in virtual schooling. *Education in Rural Australia*, 18(2), 63-74.
5. Barbour, M. K., & Mulcahy, D. (2009). Student performance in virtual schooling: Looking beyond the numbers. *ERS Spectrum*, 27(1), 23-30.
6. Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers and Education*, 52(2), 402-416. Consulting.
7. Barker, K., & Wendel, T. (2001). *e-Learning: Studying Canada's virtual secondary schools*. Kelowna, BC: Society for the Advancement of Excellence in Education.
8. Bernard, R. M., Abrami, P. C., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., Wallet, P. A., Fiset, M., & Huang, B. (2004). How does distance education compare to classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research*, 74(3), 379-439.
9. Bigbie, C., & McCarroll, W. (2000). *The Florida high school evaluation 1999-2000 report*. Tallahassee, FL: Florida State University.
10. Bonk, C., & Zhang, K. (2008). *Empowering online learning: 100+ Activities for reading, reflecting, displaying, and doing*. San Francisco, CA: Jossey-Bass.
11. Cavanaugh, C. (2001). The effectiveness of interactive distance education technologies in K-12 learning: A meta-analysis. *International Journal of Educational Telecommunications*, 7(1), 73-88.
12. Cavanaugh, C. (2007). Student achievement in elementary and high school. In M. G. Moore (Ed.), *Handbook of distance education* (2nd ed., pp. 157-168). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
13. Cavanaugh, C., Barbour, M. K., & Clark, T. (2009). Research and practice in K-12 online learning: A review of literature. *International Review of Research in Open and Distance Learning*, 10(1). Retrieved from: <http://www.irrodl.org/index.php/irrodl/article/view/607>
14. Cavanaugh, C., Gillan, K. J., Bosnick, J., Hess, M., & Scott, H. (2005). *Succeeding at the gateway: Secondary algebra learning in the virtual school*. Jacksonville, FL: University of North Florida.
15. Cavanaugh, C., Gillan, K. J., Kromrey, J., Hess, M., & Blomeyer, R. (2004). *The effects of distance education on K-12 student outcomes: A meta-analysis*. Naperville, IL: Learning Point Associates.
16. Clark, T. (2001). *Virtual schools: Trends and issues — A study of virtual schools in the United States*. San Francisco, CA: Western Regional Educational Laboratories. Retrieved from: http://www.wested.org/online_pubs/virtualschools.pdf
17. Clark, T. (2007). Virtual and distance education in North American schools. In M. G. Moore (Ed.), *Handbook of distance education* (2nd ed., pp. 473-500). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
18. Conrad, D. (2002). Deep in the hearts of learners: Insights into the nature of online community. *Journal of Distance Education*, 17(1), 1-19.
19. Conrad, M.A., & Donaldson, A. (2011). *Engaging the online learner: Activities and resources for creative instruction*. San Francisco, CA: Jossey-Bass.
20. Cosby, A. G., & McDermott, V. P. (1978). Rural youth in context. In A. G. Cosby & I. Charner (Eds.), *Education and work in rural America: The social context of early career decision and achievement* (pp. 1-18). College Station, TX: Texas A&M University.

21. Crocker, R., & Riggs, F. T. (1979). *Improving the quality of education: Challenge and opportunity*. St. John's, NL: Queen's Printing for Newfoundland and Labrador.
22. Cross, K. P. (1998). Why learning communities? Why now? *About Campus*, 3(3), 4-11.
23. Davis, N. M. (2003). Creating a learning community in the virtual classroom. In D. R. Walling & J. F. Jennings (Eds.), *Virtual schooling: Issues in the development of e-learning policy* (pp. 77-83). Bloomington, IN: Phi Delta Kappa Educational Foundation.
24. Dickson, W. P. (2005). *Toward a deeper understanding of student performance in virtual high school courses: Using quantitative analyses and data visualization to inform decision making*. Naperville, IL: Learning Point Associates.
25. Espinoza, C., Dove, T., Zucker, A., & Kozma, R. (1999). *An evaluation of the Virtual High School after two years in operation*. Arlington, VA: SRI International.
26. Ezzy, D. (2002). *Qualitative analysis: Practice and innovation*. London: Routledge.
27. Government of Newfoundland and Labrador. (2010). *Education statistics: Elementary-secondary*. St. John's, NL: Queen's Printing for Newfoundland and Labrador.
28. Greenway, R., & Vanourek, G. (2006). The virtual revolution: Understanding online schools. *Education Next* (2). Retrieved from: <http://www.hoover.org/publications/ednext/3210506.html>
29. Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *American Journal of Distance Education*, 11(3), 8-26.
30. Hill, J. R. (2002). Overcoming obstacles and creating connections: Community building in web-based learning environments. *Journal of Computing in Higher Education*, 14(1), 67-86.
31. Hill, J. R., & Hannafin, M. J. (2001). Teaching and learning in digital environments: The resurgence of resource-based learning environments. *Educational Technology Research and Development*, 49(3), 37-52.
32. Hill, J. R., Raven, A., & Han, S.. (2007). Connections in Web-based learning environments: A research-based model for community building. In R. Luppigini (Ed.), *Online learning communities* (pp. 153-168). Greenwich, CT: Information Age.
33. House, D. (1986). *Education for self-reliance: A report on education and training in Newfoundland*. St. John's, NL: Queen's Printing for Newfoundland and Labrador.
34. Kannapel, P. J., & DeYoung, A. J. (1999). The rural school problem in 1999: A review and critique of the literature. *Journal of Research in Rural Education*, 15(2), 67-79.
35. Klein, C. (2006). *Virtual charter schools and home schooling*. Youngston, NY: Cambria Press.
36. Kozma, R., Zucker, A., Espinoza, C., McGhee, R., Yarnall, L., Zalles, D., et al. (2000). *The online course experience: Evaluation of the Virtual High School's third year of implementation, 1999-2000*. Arlington, VA: SRI International.
37. McLeod, S., Hughes, J. E., Brown, R., Choi, J., & Maeda, Y. (2005). *Algebra achievement in virtual and traditional schools*. Naperville, IL: Learning Point Associates.
38. Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones K. (2009). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*. Washington, DC: U.S. Department of Education. Retrieved from: <http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>
39. Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
40. Mills, S. (2003). Implementing Online Secondary Education: An Evaluation of a Virtual High School. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference, 2003* (pp. 444-451). Chesapeake, VA: AACE.
41. Moore, M. G. (1973). Toward a theory of independent learning and teaching. *Journal of Higher Education*, 44(12), 661-679.
42. 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>
43. Mulcahy, D. M., Dibbon, D., & Norberg, C. (2008). *An investigation into the nature of education in a rural and remote region of Newfoundland and Labrador: The Straits*. St. John's, NL: The Harris Centre, Memorial University of Newfoundland.
44. Nippard, E. C. (2005). *Social presence in the web-based synchronous secondary classroom*. Unpublished Thesis. Memorial University of Newfoundland, St. John's, NL.
45. Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.

46. Rice, K. L. (2006). A comprehensive look at distance education in the K-12 context. *Journal of Research on Technology in Education*, 38(4), 425-448.
47. Riggs, F. T. (1987). *Report of the Small Schools Study Project*. St. John's, NL: Queen's Printing for Newfoundland and Labrador.
48. Roblyer, M. D. (1999). Is choice important in distance learning? A study of student motives for taking Internet-based courses at the high school and community college levels. *Journal of Research on Computing in Education*, 32(1).
49. Roblyer, M. D. (2005). Who plays well in the virtual sandbox? Characteristics of successful online students and teachers. *SIGTel Bulletin*, (2).
50. Roblyer, M. D. (2006). Virtually successful: Defeating the dropout problem through online school programs. *Phi Delta Kappan*, 88(1), 31-36.
51. Roblyer, M. D., Davis, L., Mills, S. C., Marshall, J., & Pape, L. (2008) Toward practical procedures for predicting and promoting success in virtual school students. *American Journal of Distance Education*, 22(2), 90-109.
52. Roblyer, M. D., & Elbaum, B. (2000). Virtual learning? Research on virtual high schools. *Learning & Leading with Technology*, 27(4), 58-61.
53. Roblyer, M. D., & Marshall, J. C. (2002-2003). Predicting success of virtual high school students: Preliminary results from an educational success prediction instrument. *Journal of Research on Technology in Education*, 35(2), 241-255.
54. Rovai, A. P. (2002). Sense of community, perceived cognitive learning, and persistence in asynchronous learning networks. *Internet and Higher Education*, 5(4), 319-332.
55. Ruona, W. E. A. (2005). Analyzing qualitative data. In R. A. Swanson & E. F. Holdton III (Eds.), *Research in organizations: Foundations and methods of inquiry* (pp. 233-263). San Francisco, CA: Berrett-Koehler Publishers, Inc.
56. Scherer, J. (2006). *Special report: Virtual high schools*. San Diego, CA: Distance-Educator.com.
57. Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London, U.K.: John Wiley & Sons.
58. So, H. J., & Brush, T. (2008). Student perceptions of collaborative learning, social presence and satisfaction in a blended learning environment: Relationships and critical factors. *Computers & Education*, 51(1), 318-336.
59. Stake, R. (1995). *The art of case study research: Perspectives on practice*. Thousand Oaks, CA: Sage Publications.
60. Surrey, D. W., & Ely, D. P. (2007). Adoption, diffusion, implementation, and institutionalization of instructional innovations. In R. A. Reiser & J. V. Dempsey (Eds.), *Trends and issues in instructional design and technology* (2nd ed., pp. 104-122). Upper Saddle River, NJ: Pearson Education, Inc.
61. Tu, C.-H. (2004). *Online collaborative learning communities: Twenty-one designs to building an online collaborative learning community*. Westport, CT: Libraries Unlimited.
62. Tu, C.-H., & Mclsaac, M. (2002). The relationship of social presence and interaction in online classes. *American Journal of Distance Education*, 16(3), 131-150.
63. Vygotsky, L. S. (1978). *Mind in society: The development of higher psychologist processes*. Cambridge, MA: Harvard University Press.
64. Watkins, T. (2005). *Exploring e-learning reforms for Michigan: The new educational (r)evolution*. Detroit, MI: Wayne State University. Retrieved from: <http://web.archive.org/web/20070418110356/http://www.coe.wayne.edu/e-learningReport.pdf>
65. Watson, J. F., Gemin, B., & Ryan, J. (2008). Keeping pace with k-12 online learning: A review of state-level policy and practice. Evergreen, CO: Evergreen Education Group. Retrieved from: http://www.kpk12.com/downloads/KeepingPace_2008.pdf
66. Watson, J., Murin, A., Vashaw, L., Gemin, B., & Rapp, C. (2010). Keeping pace with K-12 online learning: An annual review of state-level policy and practice. Vienna, VA: North American Council for Online Learning. Retrieved from: http://www.kpk12.com/wp-content/uploads/KeepingPaceK12_2010.pdf
67. Weiner, C. (2003). Key ingredients to online learning: Adolescent students study in cyberspace. *International Journal on E-Learning*, 2(3), 44-50.
68. Wenger, E. (1996). Communities of practice: The social fabric of a learning organization. *Healthcare Forum Journal*, 39(4), 20-26.

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