

Distributed Learning in British Columbia: A Journey from Correspondence to Online Delivery

Tim Winkelmans

Manager, E-Learning Programs Unit
British Columbia Ministry of Education¹
Victoria, British Columbia, Canada
tim.winkelmans@gov.bc.ca

Barry Anderson

Solte Consulting
Victoria, British Columbia, Canada
Barry.Anders@shaw.ca

Michael K. Barbour

Assistant Professor, Instructional Technology
Wayne State University
Detroit, Michigan, United States of America
mkbarbour@gmail.com

Canada is characterised by a large geographic area, rugged terrain, and many rural communities whose schools cannot offer the same educational opportunities as their urban counterparts. The province of British Columbia exemplifies this situation. Since 1919, British Columbia has embraced open and distance learning to provide education opportunities across the vast province. British Columbia now has over 50 public and independent (i.e., private) schools offering distributed learning to almost 60,000 students in primary and secondary education.

1 This paper does not necessarily reflect the policy of the Ministry of Education, British Columbia.

Despite the extensive use of distance education in British Columbia, most of the literature on Canada's K–12 distance education has focused on two provinces—Alberta, and Newfoundland and Labrador (Barbour & Stewart, 2008). Beyond a series of evaluations and reports prepared on behalf of the British Columbia Teachers' Federation (see Kuehn, 2002; 2003; 2004; 2006; Hawkey & Kuehn, 2007), there has been almost no published literature on the K–12 distance education experience in British Columbia. In this article we address this gap in the literature and explain how distance education is used at the K–12 level across Canada. We then describe the geography, population, and governance of the K–12 education system in British Columbia. Finally, we discuss the three historical phases of development of distance education at levels K–12 in British Columbia, with a view to explaining its recent rapid growth.

K–12 Distance education in Canada

Canadian jurisdictions have used distance education at the K–12 level for almost a century. British Columbia began using correspondence education in 1919 (Stack, 1990), and introduced virtual schools around 1993 (Barbour & Stewart, 2009). Canada is a world leader in using distance education to improve educational opportunities for K–12 students, although other large or dispersed nations are also well known for their efforts in this arena.

Online learning began at the K–12 level in British Columbia with the creation of New Directions in Distance Learning (Dallas, 1999) and the EBUS Academy (see <http://www.ebus.ca>) in Vanderhoof around 1993. This was quickly followed by district-based K–12 online learning programmes in Manitoba, Ontario, Alberta, and Newfoundland and Labrador (Barker & Wendel, 2001; Barker, Wendall, & Richmond, 1999; Haughey & Fenwick, 1996; Stevens, 1997). In their national survey of K–12 online learning, O'Haire, Froese-Germain, and Lane-De Baie (2003) reported that Alberta had the most students engaged in online learning, but British Columbia also had a significant number of district-based and consortium programmes.

K–12 Education in British Columbia

Every jurisdiction creates a system unique to its context: small, densely populated, flat places have different options from large, sparsely populated, and geographically rugged and isolated areas. Because demography and geography interact with social trends in politics, economics, and education to shape educational services, British Columbia's context is very important.

Geography

At 95 million hectares, British Columbia is larger than most countries. Located on the Pacific coast, it is Canada's westernmost province, and the third largest, comprising 9.5 percent of the country's total land area. There are only 30 nations in the world larger than British Columbia. From south to north, the province stretches 1200 kilometres; and from east to west, as much as 1050 kilometres. Its deeply indented, island-dotted coastline extends 7000 kilometres.²

The topography of the coastline and rugged mountain ranges divides the province into fiords, islands, and isolated river valleys. These geographic features have supported farming, fishing, mining, and forestry, although many of the settlements that supported these industries were too small or isolated to build schools or transport their children to schools in nearby communities. Once described as "a sea of mountains", British Columbia's geography has shaped the pattern of its population settlement and its education system.

Population

British Columbia's current population is about 4.4 million (Government of British Columbia, 2008a). Most (64 percent) live in large metropolitan areas in the south-east corner of the province (Statistics Canada, 2008). There are 105 communities with fewer than 10,000 residents, 43 with between 10,000 and 100,000 people, and 10 cities of over 100,000. In 2007–2008, the 17 urban boards of education enrolled about 383,000 students (66 percent of the total public school student population), or an average of 22,500 each; 43 rural boards of education enrolled almost 200,000 students (34 percent of the total public school student population), or an average of about 4600 each. This population distribution makes it extremely difficult to provide all students with high-quality choices.

Governance of K–12 education

Each Canadian province is responsible for its own education system. The primary influence of the national government is in the areas of aboriginal education and bilingualism. When British Columbia established Canada's first Elementary Correspondence School in 1919 (Dunae, 2006; Stack, 1990), the province affirmed its jurisdiction over education by assuming responsibility for educating children in remote areas, including the federal government's lighthouse stations. Since 1919, provincial education policy has reflected the interplay between provincial and federal rights and responsibilities.

2 Geographic characteristics obtained from <http://www.britishcolumbia.com/information/details.asp?id=38>

British Columbia is currently divided into 60 public school districts. Each district is managed by a locally elected school board that is funded by the provincial government to provide free K–12 education. To support quality and equity around the province, local school property taxes are collected provincially, melded with other provincial revenues, and redistributed to the boards of education according to a formula. In 2008, the province provided over C\$4.3 billion to boards of education, or C\$8118 per full-time equivalent student (Government of British Columbia, 2009). The province funds independent schools at up to 50 percent of the funding level provided to public schools, regulates them, and allows them to charge tuition fees. In 2007–08, independent schools enrolled 68,934 students (10.6 percent of the student population) (Government of British Columbia, 2008b). According to a recent service plan (Government of British Columbia, 2006a):

The Ministry of Education co-governs K–12 education with school boards—education services are delivered locally through school boards, public schools and independent schools, while the Ministry provides leadership, develops policy and legislation, oversees system governance, sets results-based standards and develops accountability frameworks (p. 4).

With one exception,³ each board of education represents a geographic region of the province.

Snapshot of the K–12 system

The annual *Summary of Key Information* summarises the school system's demographic and achievement information (Government of British Columbia, 2008b). Table 1 provides demographic comparisons between the full student population and distributed learning population in 2007–2008.

3 The Francophone Education Authority has province-wide jurisdiction over students with francophone rights, which are protected under the Canadian Charter of Rights and Freedoms (Department of Justice Canada, 1982).

Table 1 British Columbia enrolment profile: All students and distributed learning, 2007–2008

Category	All students		Distributed learning students	
	#	%	#	%
Student population	651,625	100	19,603	3.0
Female	319,296	49	10,819	55.2
Male	332,329	51	8784	44.8
Aboriginal	62,806	9.6	1946	9.9
Special needs	56,849	8.7	336	1.8
English as second language	62,980	9.7	33	0.2
Adult	14,882	2.6	5867	29.9
Francophone Authority	3964	1.5	n/a	n/a

Note: These numbers include public and independent schools that are the reporting schools for students. They exclude supplemental distributed learning course enrolments.⁴ For example, the francophone distributed learning students are reported through a bricks-and-mortar reporting school.

The 6-year completion rate⁵ for all students was 79 percent, although for aboriginal students the rate was only 47 percent.

Students are deemed to be of school age from 5 until their 19th birthday. Normally, the school year begins in September and ends in June, the major school vacation is in July and August, and there are shorter spring and winter vacations in December and March. Five-year-olds attend Kindergarten for half of each day, and are provided with activities based on the provincial curriculum. After Kindergarten, students proceed from Grade 1 to Grade 12, and most students graduate from secondary school in their 18th year. The provincial curriculum is usually divided into Elementary (Kindergarten to Grade 7) and Secondary (Grades 8 to 12). The final 3 years of secondary school constitute the Graduation Program, and the student's final school transcript includes their final marks for all Graduation Program courses.

4 *Supplemental* courses are part time.

5 The graduation rate of all students in a cohort 6 years after they entered Grade 8, calculated by tracking each member of the cohort for 6 years.

Elementary programmes tend to be organised as class groupings with a main teacher, running from September to June. Secondary schools usually organise students into courses with separate teachers, and may run through the school year or as two semesters: September to January, and February to June.

The province establishes prescribed learning outcomes for all compulsory and significant elective courses from Kindergarten to Grade 12, but boards of education may also offer local courses that meet provincial guidelines.

Distributed learning

Distance education in British Columbia is referred to as distributed learning. Legislation in 2006 defined distributed learning as “a method of instruction that relies primarily on indirect communication between students and teachers, including internet or other electronic-based delivery, teleconferencing or correspondence” (Government of British Columbia, 2006b, C-12). In June 2008 there were nearly 49,000 school-age and adult students taking at least one distributed learning course from 50 public and 13 independent distributed learning schools. This represents about 7.5 percent of the entire student population. Table 2 provides a comparison with several other jurisdictions.

Table 2 Participation and completion rates compared for selected jurisdictions for the 2007–2008 school year

	British Columbia	Florida	Idaho	Illinois	Michigan	Utah	New Zealand
Total student population	651,600	2,754,000	271,000	2,125,000	1,738,000	559,000	759,900
Distributed learning student population	49,000	72,880	9,460	3,404	9,200	6,763	13,000
Participation rate	7.5%	2.6%	3.5%	0.2%	0.5%	1.2%	1.7%
Course count	127,600	121,765	6619	6012	11,000	7500	not found
Student count method	Participation	Completion	Registration	Registration	Participation	Completion	Registration
Course completion rate	K–7: 90% 8–12: 64%	80%	70%	not found	75%	not found	The Correspondence School: 50% Virtual Learning Network: 85%

Note: The data in this table should not be considered definitive. The authors acknowledge the lack of consistency in the vocabulary, definition, interpretation, and calculation of these measures, but believe that data in this format will promote dialogue, transparency, and eventual adoption of new reporting standards by national statistical agencies.

Course count: One course represents one student in a full-year (Carnegie Unit) course.

Figure 1 shows that British Columbia's distance learning enrolments grew more than 2000 percent between 2001 and 2008.

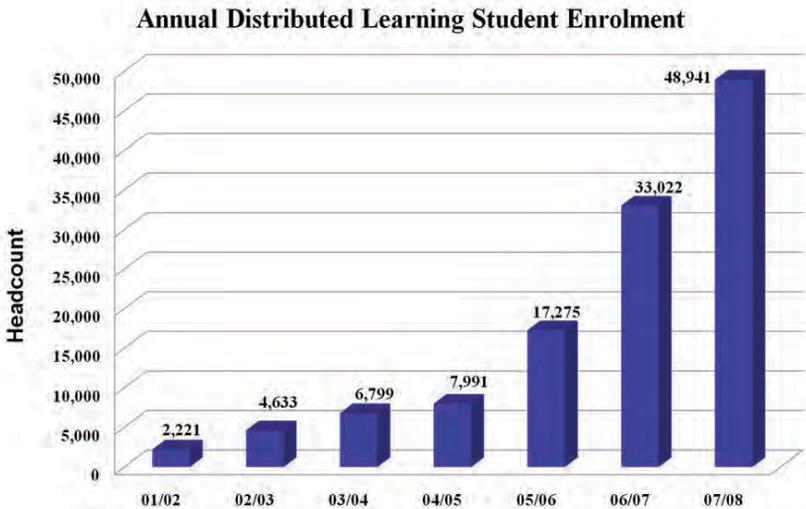


Figure 1 Changes in public and independent distributed learning school headcount enrolments in British Columbia from September 2001 to June 2008 (Winkelmans, 2008)

A large number of supplemental enrolments in British Columbia account for the enrolment growth observed in Figure 1. Of 46 boards of education with distributed learning agreements, 30 (64.8 percent) are rural and 16 (35.2 percent) are urban. The student population in British Columbia is about 41 percent rural and 59 percent urban. The proportions are nearly reversed for distributed learning—60 percent of the distributed learning students enrol in rural districts and 40 percent enrol in urban districts.

Although all students in the province can access distributed learning courses, the system appears to focus more on rural students. Students enrolled in distributed learning can access these opportunities from a school or their own homes. Programmes follow the provincial curriculum and are led by certified teachers. Students receive regular report cards, and are subject to conditions associated with regular schools.

A separate classification, *home-schooling*, is reserved for situations in which parents assume responsibility for curriculum, instruction, assessment, and other educational activities. These students are not included in official

statistics for those enrolled in distributed learning opportunities. In September 2007 British Columbia had 2791 registered home-school students who were not included in the distributed learning enrolment statistics (Government of British Columbia, 2008b). The number of students being home-schooled has dropped since the introduction of distributed learning programmes.

British Columbia's population, geographic features, and political circumstances have produced an education system that blends central oversight with a high degree of student choice and local programme autonomy, and that is best exemplified through its distributed learning strategy. This strategy evolved over decades, in response to and enabled by the changes in publishing tools, information and communications technologies, and the pedagogical approaches discussed in the next section.

Evolution of distributed learning in British Columbia

Distributed learning in British Columbia developed in three phases. The first used correspondence education provided by the provincial government. In the second phase (1980s), delivery of distributed learning became more decentralised as the Ministry of Education created a regional model to administer and deliver K–12 distance education. The third phase began about 1990, when the Ministry began to exert more oversight. However, programmes became more decentralised as more schools offered services over the internet.

1919 to 1984: Centralised correspondence education

Dunae (2006) indicated that British Columbia's first Elementary Correspondence School opened in 1919 with 86 students—13 of whom were in lighthouses. This school grew to over 600 students by 1929, when the Secondary Correspondence School opened. Both schools operated as separate units within the Education Department (later the Ministry of Education) until 1968, when they merged into the Correspondence Education Branch. Nearly every aspect of this service (course development, marking, inventory, and staffing) operated from central offices in Victoria from 1919 until 1984.

Until 1984, British Columbia's size and terrain prevented consideration of other distance education technologies such as radio, television, or telephone. Indeed, most students who received their education through the Correspondence School were unable to attend schools. After 1984 the Correspondence School began to broaden its scope to include students in small and rural schools who needed additional courses, as well as students who could not attend regular schools. Local school superintendents approved all enrolments in correspondence education.

All through this period, technological innovation addressed the mechanics of postal service, learning material design and production, and administration. Significant effort went into designing systems that could track intricate relationships between student activities, inventory shipments, markers, and local test supervisors. By the 1980s, course developers had to have teaching credentials. Technology was inconsequential in the student learning process.

The Correspondence School competed with other government departments for operating funds from the province's general revenues. The amount requested was based on a per-student operating cost, which was often much lower than the cost of educating students who attended school. This practice created an expectation that correspondence and distance education would be a lower-cost alternative to regular schooling. By the 1980s, procedures were so precisely defined that the Ministry created a comprehensive computer program to coordinate administrative tasks. Although the program no longer exists, its echoes remain in successors that manage today's distributed learning services.

1984 to 1996: Decentralised distance education

Administration

In the 1980s, provincial government initiatives to regionalise services included correspondence education, based on the success of a small regional office established in Pouce Coupe in 1941 (Dunae, 2006), and then Dawson Creek (Stack, 1990). The Ministry of Education divided the province into nine regions; each had its own regional correspondence school, which was operated by one of the school boards in that region (Government of British Columbia, 1992; South Central Interior Distance Education School, 2009). Each regional correspondence school contracted secondary markers and hired its own principal and elementary teachers. The boards were responsible for providing administrative staff with terminal access to the Ministry's correspondence administration software program, and for providing a regional service and material distribution facility (which was often surplus space in the school district). The Ministry of Education retained responsibility for course development, central warehousing of printed course modules, learning resources and materials, funding, and policy (including fees for students who needed supplemental correspondence courses).

This first regional correspondence school opened in 1984, and by 1990 all nine schools were established (Stack, 1990). Initially, the Ministry had significant control over the regional correspondence schools, including approval of the school principal. However, by 1994 this control had shifted to the boards, and the schools operated their own computerised administration

$$\text{Distributed learning success} = \frac{\text{number of courses passed}}{(\text{active courses} - \text{courses in progress} - \text{withdrawals})^8}$$

For the 2006–2007 school year, the British Columbia Ministry of Education calculated distributed learning course success rates for elementary and secondary programmes. For the latter, results have been further organised by enrolment cohort and age status (school age or adult). Elementary success rates were nearly 90 percent, and overall secondary rates were 64 percent. However, as Table 3 shows, there was a general decline in secondary success as the student group aged and the school year progressed.

Table 3 Distributed learning course success rates in three secondary school cohorts (2006–2007)

	1 Jul–15 Oct 2006		16 Oct 2006–15 Feb 2007		16 Feb–30 Jun 2007		1 Jul 2006–30 Jun 2007 (full school year)	
	N	Success rate (%)	N	Success rate (%)	N	Success rate (%)	N	Success rate (%)
All Grade 8–9	6691	78	4191	67	1967	56	12,849	71
All Grade 10–12	14461	67	17,071	63	12,142	56	43,674	63
School age Grade 8–9	6576	78	4086	68	1899	57	12,561	72
School age Grade 10–12	12,038	71	14,779	64	10,489	57	37,306	64
School age Grade 8–12	18,604	74	18,865	65	12,388	57	49,857	66
Adult Grade 8–12	2,157	48	2,121	57	1,228	57	5,506	52

Note: The legal school year starts on 1 July, but the traditional school year for most schools begins in early September. Schools organised into two semesters usually have their break in early February.

8 *Active courses* meet participation criteria to be eligible for funding; *courses in progress* are open-ended courses that students are still working on when course completion data is collected.

One reason for the negative trend may be the changing nature of the student—later in the school year, a higher proportion of the students were using distributed learning as a second chance or credit recovery option after failing a course at their local school. Nearly all of the adults were taking courses towards secondary school completion because they did not finish Grade 12 by their 19th birthday (i.e., they were more likely to have been unsuccessful as school-aged students).

One major policy domain remains unresolved for both the Ministry and distributed learning schools. Distributed learning programmes are limited to serving students who reside in British Columbia, with minor exceptions. However, interest continues to grow in these distributed learning programmes from students outside the province who are not ordinarily resident therein.

Conclusion

British Columbia's history has created a culture in which high-quality distributed learning services can grow. Since 1919, and especially since 1984, distributed learning policy in British Columbia has promoted decentralisation coupled with government oversight; access to educational programmes from anywhere in the province; and the use of publishing, communication, and information technologies to improve processes and establish entirely new delivery systems.

Some interesting lessons are emerging from the British Columbia experience. For example, the importance of policies that encourage online delivery is shown clearly in the sharp increase in enrolments that followed the policy changes to encourage student and parent choice by offering flexibility through distributed learning. The enrolment changes in British Columbia also illuminate the importance of funding systems that encourage the operation of distributed learning systems.

Once the growth opportunities were clear to school boards and administrators, there was a rapid increase in the 'supply' of courses and services available to students. There are obvious implications for the support needed to develop, categorise, evaluate, and organise appropriate pedagogical content for delivery to students and teachers. British Columbia has seen many examples of duplication and overlap in local efforts to undertake these tasks. Developers of funding and organisational policies are finding it particularly difficult to assess the funding implications of modern technologies.

People and companies trying to sell technology-based services to the system face equally puzzling circumstances. For example, what is the meaning of a ‘school district license’ if the school can use a licensed product outside its boundaries (as all districts and schools in the province can now do, at least within British Columbia)?

Technology allows much better tracking of student performance, and for courses to be broken down into much smaller units. In this regard, we see the beginning of educational systems that have the potential to break down classroom-based models of organisation and governance. School and classroom-based models were adopted by the education system at a time when it needed to serve large numbers of students who (for the most part) could be economically gathered at central locations. In those locations, knowledge (in the form of teachers and books) could be delivered and results assessed with a high degree of efficiency.

Technology is also breaking down organisational barriers between K–12 and post-secondary education. British Columbia already has mixed-age classes; for example, some students in Grade 6 take and pass Grade 10 and 11 courses. The logical extension of this practice will be for students who are funded and managed as conventional secondary students to take a mix of secondary and post-secondary classes. Who is responsible for these students? Who pays?

The distributed learning environment also enables quality control and improvement. Educational audits and distributed learning standards are important foundations for improving quality, but techniques of continuous quality improvement can be used in the distributed learning environment. This means that parts of courses may be improved; or that poor schools or courses may be de-authorised and their students re-directed elsewhere.

There are improvements for teachers too. Because large groups of students can be aggregated from the province, teachers no longer need to teach multiple courses to obtain a full teaching load. Discipline problems are also greatly reduced in online courses.

Canada does not coordinate e-learning or distance education policies and services nationally (Canadian Council of Learning, 2009). According to Barbour and Stewart (2008), British Columbia has been the most active and progressive province in creating specific legislation and regulations to govern

distance learning at the K–12 level outside brick-and-mortar schools. That said, British Columbia can, and does, share its knowledge and experience with other jurisdictions. Through dialogue, initiative, partnership, and organisations like the Council for Ministers of Education in Canada, British Columbia contributes to, and learns from, the evolving global classroom.

References

- Barbour, M. K., & Stewart, R. (2008). *A snapshot state of the nation study: K–12 online learning in Canada*. Vienna, VA: North American Council for Online Learning. Retrieved January 24, 2009, from http://www.inacol.org/resources/docs/NACOL_CanadaStudy-lr.pdf
- Barbour, M. K., & Stewart, R. (2009, January). *A snapshot state of the nation: K–12 online learning in Canada*. Invited presentation by the Canadian Institute of Distance Education Research. Retrieved January 25, 2009, from http://cider.athabascau.ca/CIDERSessions/mkbarbour/AudioConvert_1231363643702.mp3
- Barker, K., & Wendel, T. (2001). *E-learning: Studying Canada's virtual secondary schools*. Kelowna, BC: Society for the Advancement of Excellence in Education. Retrieved July 31, 2005, from <http://web.archive.org/web/20040720185017/http://www.sae.ca/pdfs/006.pdf>
- Barker, K., Wendel, T., & Richmond, M. (1999). *Linking the literature: School effectiveness and virtual schools*. Vancouver, BC: FuturEd. Retrieved July 31, 2005 from <http://web.archive.org/web/20061112102653/http://www.futured.com/pdf/Virtual.pdf>
- Canadian Council of Learning. (2009). *State of e-learning in Canada*. Ottawa, ON: Author. Retrieved June 2, 2009, from http://www.ccl-cca.ca/pdfs/E-learning/E-Learning_Report_FINAL-E.PDF
- Crichton, S. (1997). *Learning environments online: A case study of actual practice*. Unpublished doctoral dissertation, University of Sydney, Australia.
- Dallas, J. (1999). *Distance education for kindergarten to grade 12: A Canadian perspective*. Presentation at the Pan-Commonwealth Forum, Brunei. Retrieved January 27, 2009, from <http://www.col.org/forum/PCFpapers/PostWork/dallas.pdf>
- Department of Justice, Canada. (1982). *Canadian charter of rights and freedoms*. Retrieved May 22, 2009, from <http://laws.justice.gc.ca/en/charter/#langues>

- Dunae, P. A. (2006). *The homeroom: Correspondence education*. Nanaimo, BC: Malaspina University. Retrieved July 24, 2006, from <http://www.mala.bc.ca/homeroom/content/topics/programs/corresp.htm>
- Education Statutes Amendment Act*. S.B.C. c. 22. (1995).
- Government of British Columbia. (1989). *Correspondence courses 1989–1990: Course descriptions*. Victoria, BC: Author.
- Government of British Columbia. (1992). *Ministry of Education: Annual report, July 1, 1990 to June 30, 1991*. Victoria, BC: Author.
- Government of British Columbia. (1993). *Distance learning guidebook 1993–94*. Victoria, BC: Author.
- Government of British Columbia. (1996, November 22). *New open school program improves access for students*. Victoria, BC: Author. Retrieved December 19, 2008, from <http://www2.news.gov.bc.ca/archive/pre2001/1996/nr48-96.asp>
- Government of British Columbia. (1997). *Report on accountability in the K to 12 education system: Appendix B, Ministry change mechanisms*. Victoria, BC: Author. Retrieved December 19, 2008, from <http://www.llbc.leg.bc.ca/public/PubDocs/bcdocs/283694/appendb.htm>
- Government of British Columbia. (2005, April 22). *Distributed learning in BC: The current picture and emerging trends*. Presentation at the annual BCED Online Conference, Vancouver, BC.
- Government of British Columbia. (2006a). *2006/07–2008/09 service plan: Ministry of Education*. Victoria, BC: Author. Retrieved July 24, 2006, from <http://www.bcbudget.gov.bc.ca/2006/sp/educ/MinistryOverview4.htm>
- Government of British Columbia. (2006b). *School Act*. Victoria, BC: Author. Retrieved July 25, 2006, from <http://www.bced.gov.bc.ca/legislation/schoollaw/revisedstatutescontents.pdf>
- Government of British Columbia. (2008a). *Quick facts about British Columbia: 2008 edition*. Victoria, BC: Author. Retrieved December 19, 2008, from <http://www.bcstats.gov.bc.ca/data/qf.pdf>
- Government of British Columbia. (2008b). *Summary of key information*. Victoria, BC: Author. Retrieved May 22, 2009, from <http://www.bced.gov.bc.ca/keyinfo/pdfs/ski08.pdf>

- Government of British Columbia. (2009, March 13). *Backgrounder: Funding continues to rise despite enrolment decline*. Victoria, BC: Author. Retrieved December 15, 2009, from http://www.bced.gov.bc.ca/news/docs/bg09-10PrelimOperatingGrants_090313.pdf.
- Haughey, M., & Fenwick, T. (1996). Issues in forming school district consortia to provide distance education: Lessons from Alberta. *Journal of Distance Education, 11*(1). Retrieved September 21, 2008, from <http://www.jofde.ca/index.php/jde/article/view/242/454>
- Hawkey, C., & Kuehn, L. (2007). *BCTF research report—The working conditions of BC teachers working in distributed learning: Investigating current issues, concerns, and practice*. Vancouver, BC: British Columbia Teachers' Federation. Retrieved January 6, 2008, from http://www.bctf.ca/uploadedFiles/Publications/Research_reports/2007ei01.pdf
- Hebden, J. (2004). *Jim Hebden's reminiscences*. Kamloops, BC: Kam High Alumni Association. Retrieved January 27, 2009, from <http://www.kamhigh.com/history/Jim%20Hebden.asp>
- Kuehn, L. (2002). *BCTF research report: Developments with distributed learning*. Vancouver, BC: British Columbia Teachers' Federation. Retrieved January 6, 2008, from <http://www.bctf.ca/publications/ResearchReports.aspx?id=5556>
- Kuehn, L. (2003). *BCTF research report: Distributed learning in B.C., 2002–03*. Vancouver, BC: British Columbia Teachers' Federation. Retrieved January 6, 2008, from http://www.bctf.ca/uploadedfiles/publications/research_reports/2003ei02.pdf
- Kuehn, L. (2004). *BCTF research report: Online education is not the same as home schooling*. Vancouver, BC: British Columbia Teachers' Federation. Retrieved January 6, 2008, from <http://www.bctf.ca/publications/ResearchReports.aspx?id=8430>
- Kuehn, L. (2006). *BCTF research report: Distributed learning in British Columbia schools*. Vancouver, BC: British Columbia Teachers' Federation. Retrieved January 6, 2008, from <http://www.bctf.ca/publications/ResearchReports.aspx?id=9248>
- Miller, K. (2002, February 28). *Letter to school districts*. Retrieved January 27, 2009, from <http://www.bced.gov.bc.ca/k12funding/funding/02-03/estimates/letter.pdf>

- O’Haire, N., Froese-Germain, B., & Lane-De Baie, S. (2003). *Virtual education, real educators: Issues in online learning*. Ottawa, ON: The Canadian Teachers’ Federation.
- Schreck, D. (2002). *Open school for sale*. Vancouver, BC: Author. Retrieved December 19, 2008, from <http://www.strategictoughts.com/record2002/openschool.html>
- South Central Interior Distance Education School. (2009). *History: Who we are*. Merritt, BC: Author. Retrieved January 30, 2009, from <http://www.scides.com/pages/history.htm>
- Stack, A. (1990). Administrative problems associated with regionalization. *Distance Education*, 11(1), 92–115. Retrieved February 2, 2009, from <http://dx.doi.org/10.1080/0158791900110107>
- Statistics Canada. (2008). *Population of census metropolitan areas (2001 census boundaries)*. Ottawa, ON: Author. Retrieved January 30, 2009, from <http://www40.statcan.gc.ca/l01/cst01/demo05a-eng.htm>
- Stevens, K. (1997). The place of telelearning in the development of rural schools in Newfoundland and Labrador. *Prospects*, 4(4). Retrieved June 21, 2005 from <http://www.cdli.ca/Community/Prospects/v4n4/telelearning.htm>
- Sullivan, B. (1988). *Report of the Royal Commission on Education: A legacy for learners*. Victoria, BC: Author.
- Winkelmans, T. (2008, October). *Distributed learning in British Columbia: Policies for choice, quality, and achievement*. Presentation at the annual Virtual School Symposium, Phoenix, AZ.
- Wynne, S. D. (1997). *An overview of virtual schooling in North America and Europe*. Victoria, BC: Open Learning Agency.

Biographical notes



Tim Winkelmans

Tim Winkelmans is currently Manager of the E-Learning Programs Unit of the Ministry of Education in British Columbia. He has been associated with public service technology and distance education initiatives in British Columbia since 1989. Tim is currently completing his doctorate in Educational Leadership from the University of Calgary.



Barry Anderson

Barry Anderson is Executive Director of the Virtual School Society, an organisation dedicated to increasing access to high quality online educational services in British Columbia. A graduate of the Ontario Institute for Studies in Education, former professor of Education at Washington University in St. Louis, and former executive with the British Columbia Ministry of Education, Barry brings his experience with a wide array of research, financial, policy, and administrative approaches to the support of online education.



Michael K. Barbour

Michael Barbour is an Assistant Professor in Instructional Technology at Wayne State University. He has been involved with virtual schools in Canada and the United States for the past decade as a researcher, teacher, course designer, and administrator. Michael's research focuses on rural K–12 students learning in online environments.