Online education in schools

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Introduction

This article presents information about practices and issues involved in the management and delivery of online education in schools. “Online education” denotes the processes entailed in distance education where network technologies such as the Internet are used to make connections among students, teachers, and educational materials. Computer technology differentiates this specific type of distance education from correspondence, radio, and television formats.

Online education in schools, which is relatively new on the world scene, is currently receiving a great deal of attention in many Western jurisdictions. For example, Farrell (1999) recently conducted a survey for the Commonwealth of Learning about the extent to which online education is being used in Commonwealth countries. He concluded that interest is increasing in online programs as a means of meeting the needs of remote, home-schooled, or disparate students for whom attendance at site-based schools presents difficulties. Educators in school systems can learn a great deal about the management and delivery of online education from the experiences of post-secondary institutions which have been engaged in this activity for a longer period.

The Internet allows instructors to post lessons and course assignments to a central server which students can access at any time. It also allows instructors and students to use information provided at World Wide Web sites. However, how online education has affected the lives of teachers and students has not been thoroughly researched.

The study reported in this article examined emerging instructional patterns in online programs, the practices of online teachers, and issues arising from online education in the province of Alberta, Canada. In 1999, more than 4,000 students were enrolled in online programs in 20 Alberta schools, which was the greatest penetration of online schooling in Canada (Haughey and Muirhead, 1999). A central reason for moving to a mediated online environment was the belief that it would improve completion rates among distance education students. Online programs are operated either from regular public schools or from facilities within school district central offices, while others operate as schools within local districts. Some programs voluntarily restrict their operations to serving the needs of students within their local area, while others accept students from across Alberta and a few recruit students from outside the province.

Some programs have as few as 15 students while others have more than 1,000. Some are operated as private fee-paying schools which offer specialized religious programs for children of missionaries and are affiliated with a home-schooling centre. Staffing arrangements within current online programs are also diverse, with some teachers working full-time online while others share teaching responsibilities between online programs and site-based learning environments.

Potentially, online education can be conducted from any location, including a home, which has the necessary equipment and network connections. The ability to teach at any time – and potentially from any place – raises interesting questions about roles, responsibilities, and compensation for online teachers.

Also, some students are geographically isolated and either cannot attend a site-based learning environment or they attend a small school which cannot offer a full range of courses. The use of the telephone, Internet audio-files, and new Web-compliant (software) teaching tools such as Symposium or Learnline have expanded options for “real
time” communication. This multiplicity of communication options has made the making of decisions about how best to communicate with students more complex for teachers than in either face-to-face or correspondence environments.

Relevant literature

“Technology” is used throughout this article in two inter-related ways (Basalla, 1988). First, it denotes the machine-like hardware embedded in the personal computer and related digital networks. Second, it describes the human processes and organizational practices (Keilser and Sproull, 1987) that are associated with the operation of emerging digital technologies for online learning.

Cuban (1986) suggested that the major impediment to successful machine-technology adoption is the misfit between entrenched teaching practices and the demands of technology. The difficulty of altering existing beliefs and work patterns was echoed by Drucker (1994), who proposed that unlearning previous practices was far more difficult than learning new skills.

The second meaning of technology relates to instructional design and content development in online education (Kemp et al., 1998). Eastmond (1995) stated that little attention has been paid to instructional design for computer-mediated communication (CMC) in schools. Because teachers are already competent in instructional design, they have little direct experience with using instructional designers. The team approach to content development in distance education was pioneered by the Open University in the UK where individuals brought specific expertise to the instructional design process (Moore and Kearsley, 1996), but no one individual could possess all the necessary skills.

Teachers have long desired to know how best to address the unique needs of students (McGreal, 1996; Mehllinger, 1995; Norris and Dolence, 1996; Oblinger and Maruyama, 1996). Various strategies which individualize instruction have often significantly increased workloads and stress, sometimes leading to burnout (Chorney, 1997). CMC has been identified as one means of providing more individualized instruction to students. Snyder (1997) suggested that home-schooling parents view online programs as particularly important when they lack the necessary academic skills to act as the primary instructor in their children’s education. Further, Berge (1998) considered that distance education programs will continue to migrate to online environments to ensure quality learning opportunities for students.

Research design and methods

Examination of Web-based documents from online schools, print-based information supplied by online programs to the public, publicly available information from Alberta Education, personal communications with Alberta educators, and other research studies were used to establish a baseline reference for the emergence of online education in the province.

Semi-structured interviews were chosen as the means of data collection because they provide “maximum flexibility, adaptability, insightfulness, sensitivity, and perceptibility” (Carney, 1990, p. 7) and maximum opportunities for interviewer and interviewee to explore topics of mutual interest.

After preliminary interviews, 13 teachers in four online schools were selected for this study based upon their program infrastructures, institutional support, orientation to online education, and comparable subject and teaching levels. Some teachers who taught from home were included. They allowed the researcher to visit their homes and to share insights about the experience of living, working, and teaching from home.

All 13 teachers participated in several interviews which were taped, transcribed, and returned for verification and correction. Online course materials, Web pages, assignments, sample units, student manuals, and other materials in development by teachers were examined.

Trustworthiness of data and results was ensured by adhering to four procedures recommended by Glesne and Peshkin (1992):
1 having respondents review interview transcripts;
2 being aware of personal biases and orientations;
3 using various data sources; and
4 establishing data audit trails.

The task of analysis was made less onerous by the use of computer-aided qualitative data analysis software (CAQDAS).

Online school settings

The online schools differed in arrangements for where teachers worked, their working conditions, their length of operation, and enrollment. All had begun operating within the past four years and had experienced the challenges of rapid student growth, offered similar programs, employed similar
technology, and relied upon online teachers to develop the online courses.

Northern Virtual School (NVS) began operation in September 1998 with approximately 200 full-time students in Grades 6-12. At the end of its first year of operation, enrollment had grown to 395 full-time and 220 part-time students. NVS teachers worked in an open-plan office environment.

Middle Virtual School (MVS), one of the oldest online schools in Alberta, was affiliated with an urban school district. It began operating in September 1996 with 200 students. Many of the original students were from the local area and from home-schooling families. Family was considered critical to online education because of the school’s Roman Catholic affiliation and its reliance upon parents to support and become actively involved in their children’s education.

Eastern Virtual School (EVS) had teachers who taught from school offices adjacent to a computer laboratory. If required, online students could come to the high school for tutorial assistance. The computer lab allowed students from the high school to enroll concurrently in face-to-face and online courses. During 1999, approximately 350 local high school students had enrolled for one online course.

Southern Virtual School (SVS) was in its first year of operation. SVS teachers worked in an open area adjacent to a large computer laboratory in the local regional high school. SVS had one full-time online teacher and six other teachers from the regular high school who had been assigned to teach online part-time. The superintendent believed that teachers who held either online or traditional teaching responsibilities could draw upon their experiences from one teaching environment to develop and enhance materials for the other teaching environment.

The online teachers

A total of 13 online teachers were interviewed over six months, January to June 1999. Their professional experiences were diverse, ranging from those beginning their careers (two) to those with some 15 or more years of classroom experience (three). Two teachers brought extensive experience from industrial settings, while two possessed experience from teaching in both the public and post-secondary sectors. Four possessed specialized skills relevant to online teaching such as computer programming skills that allowed them to develop software solutions to pedagogical issues. Three were novice computer users.

A common characteristic among all teachers in this study was their high level of personal commitment to online education. Teachers spoke of working nights, weekends, and during summer holidays, but none regretted the decision to teach online, despite the personal sacrifice and increased stress.

### Results – professional practices

#### Course development

All teachers reported that the development of online courses and associated online materials was a complex process involving many pedagogical and technological considerations. The first task they undertook as online teachers was preparation of online course materials.

Puzzling over how online students best learned in an online environment required teachers to reflect upon their past professional experience and theoretical knowledge bases. Participants reported mulling over how best to use the power inherent within emerging digital technologies to create maximal learning opportunities for students. While all teachers felt professionally comfortable and competent in planning for face-to-face learning, some experienced a sense of uncertainty in designing learning opportunities for online students.

Many teachers felt adrift without a pre-service or professional knowledge base to draw upon when confronted with problems in developing online course materials. In the absence of any certainty of direction, and lacking a solid theoretical framework to draw upon, teachers reported resorting to six familiar models from their previous classroom experiences.

1. **Textbook model.** Teachers followed the assignments, activities, materials, pacing, chapter headings, and linear format found in textbooks.

2. **Program of studies model.** Teachers based online course content on the required expectations for schools in core and optional courses.

3. **Examinations model.** Teachers considered that they were to prepare students for provincial examinations and tests even though this could lead to an atmosphere in which experimentation was not welcomed.

4. **Timetable model.** Teachers focused on the traditional rhythms of the classroom and assigned a time-to-completion factor to each activity or unit.

5. **Classroom model.** Teachers used their previous classroom experience as a basis
for their online practices. After introducing lessons by e-mail or an online message, teachers directed students to undertake activities supervised by a responsible parent or other adult. Assignments or projects were then assessed by the teachers.

6 Instructional design model. Teachers analyzed student needs; designed, developed, and implemented courses; and evaluated students. Course design involved reviewing the Program of Studies, an inventory of available course materials, and digital resources such as CD-ROMs.

Copyright
One of the most difficult issues which confronted online teachers involved material they could use in courses. The issue of "copyright" made many teachers feel anxious. While teachers considered that they knew the rules about acceptable use of materials in traditional classrooms, they were less sure about what materials could be used from the Internet or other digital sources. Moreover, the ease with which digital technology allowed content to be copied confronted online teachers with ethical and legal issues.

Instruction
Unlike traditional educational settings with relative privacy, online education is practiced in a public area. Although all schools used some form of password protection to control unauthorized access, the nature of the Internet and the ease with which passwords could be shared resulted in online courses that were "transparent" to the general public. This created an environment in which teachers' professional practice was publicly exposed in ways that face-to-face education was not.

All online teachers wished to move away from text-based courses to online courses which incorporated multimedia components such as video, pictures, and active demonstration of complex topics.

Student assessment
Teaching online presented teachers with unfamiliar challenges about how to assess student learning. The chief challenge was how to develop an assessment strategy which would sufficiently reflect and measure student learning and student responsibility for learning. This was specially relevant because the role of online teacher was less one where information was transferred than one where the teacher was a "guide on the side". Teachers struggled with notions of what type of assignment would best demonstrate acquisition of knowledge and skills.

Mathematics teachers were particularly challenged by how to design online assignments. The study of mathematics required teachers and students to render mathematical symbols through the use of equation editors. Although each student and teacher computer came pre-loaded with a mathematics text editor, the time required to render mathematical symbols in a digital environment was two or three times longer than using paper and pencil.

The teachers discussed the challenges inherent in the distance they felt from students and the difficulties they had in using ongoing, informal assessment as a teaching tool. They also recounted specific challenges in assessing creative writing. For example, one teacher described his inability to sit down and discuss with students their progress and strengths and weaknesses on a specific piece of writing.

Further, all online teachers reported unease with the issue of trust and their inability to ensure that the completed assignments received from students were completed by them. Their concern was partially fueled by other educators who often remarked that online students were privileged through the lack of direct teacher supervision of the learning and testing environment.

Results – interactions
Teacher-parent interactions
Teachers reported significant differences in their interactions with parents between online and traditional teaching. For example, conversations with parents involved greater discussion about pedagogical issues and were more often focused on student learning than they had been in traditional school settings.

One reason suggested by teachers was the difficulty that both teachers and parents face in attempting to contact each other. Few teachers in traditional schools enjoy ready access to computers and e-mail. Telephones are often located some distance from classrooms. In contrast, the interviewed online teachers reported having access to an array of communication devices. Voice mail and other messaging systems encouraged both parents and students to leave messages for teachers.

Also, rather than having their children's educational experience filtered and interpreted through the lenses of their children, parents of online students had
direct access to the “classroom”. Parents could see their children’s schoolwork and assignments at any time simply by looking at their computers.

At all online schools, the practice of involving parents in unit and term testing was well established. Parents administered unit and term tests which were sent to them by e-mail. They were instructed to arrange for a testing period, monitor and correct the test, and return the test mark to their children’s teacher.

**Teacher-teacher interactions**

All teachers described how much more intense and close their relationships were with their online colleagues than they had been with their previous classroom colleagues. Unlike traditional school settings where teachers taught in relative isolation from each other, online teachers described their online teaching experiences as “transparent”, where teaching practices, interpersonal communications, and instructional activities took place in an online public space. Even MVS teachers who worked from home offices reported closer professional relationships with colleagues than they had encountered in traditional school settings.

Another aspect of working in close proximity to one’s colleagues was the opportunity to engage in conversations at any time. One EVS teacher remarked that “The people who are here [in the office] can have immediate contact with you. You’re not bound by timelines, you don’t have to be in a class, so therefore you can take ten minutes out of your morning to talk”.

**Teacher-student interactions**

Interviewed teachers identified some dissatisfaction with the quality and quantity of interaction between themselves and students. While teachers spoke about the importance of interaction for student motivation and learning, they characterized their interactions with students as rudimentary. Interactions consisted predominantly of e-mail interactions about assignments, questions about a particular aspect of a lesson, and sending general e-mail messages to students about a portion of a lesson. In some cases, notably at NVS, the telephone augmented e-mail interaction. However, interaction was generally restricted to inquiries about technological support or curricular concerns. Teachers noted that they were perplexed as to how to initiate interactions with students to build relationships while also keeping pace with the amount of work involved in teaching online.

Reliance upon e-mail as the primary means of online communication was partly due to the cost of alternative communication strategies. Only one of the four online schools in the study had access to a toll-free telephone number which students could use to contact teachers or which teachers could use to contact students or parents. The telephone provided teachers with the opportunity to build relationships with students in ways that e-mail could not achieve.

When asked to identify the most important interactive tool for gaining an understanding of students, most teachers selected online “chat” sessions which allowed teachers and students to converse and get to know each other in an informal setting. “Chat” is defined as synchronous text-based interaction mediated by computer technology. Use of synchronous chats gave teachers an opportunity to know their students in ways that may not have been possible in a face-to-face setting where appearance or social skills could have interfered with communication.

**Student-student interactions**

All teachers divulged how important they felt interaction was between online students especially where students were studying online from home and could be socially isolated. In describing their responsibility to facilitate or manage student-student interactions, teachers reported wrestling with the questions concerning what role they should play in requiring student-student interaction.

Where courses were self-paced and students were working at different paces and places, the requirement for students to collaborate on projects was more difficult. This was a particular issue at NVS where most online courses were self-paced. Consequently, teachers often struggled to initiate student-student interaction where grouping students for project work was problematic and students commonly preferred to work alone.

**Results – technological aspects**

The search for new ways of using the Internet and associated technologies often resulted in teachers being frustrated by technical problems but concurrently excited by the potential for meeting the learning needs of students in new ways. One of the chief surprises was how little the teachers spoke about technological details and underlying background programming architecture. All
disclosed how technology had allowed them to think about teaching differently and how it had permitted them to bridge the psychological and physical distance between themselves and their students. To some extent, they viewed online education as liberating them from the confines of the classroom.

**Bandwidth**

“Bandwidth” indicates the amount of data that can be transmitted in a given period of time over the Internet from one computer to another computer. It is usually expressed as bits per second (bps). For example, a 14.4 bps modem is able to send 14,400 bits of data per second.

Within Alberta a wide disparity existed in 1999 concerning the available bandwidth among students and teachers. While urban students and teachers along the so-called “digital corridor” between major centres enjoyed a number of Internet access options – including high-speed modem pools, cable internet, and new high bandwidth telephony connections – rural residents lacked many of these options. Most online schools relied upon the provincial telephone company to provide dialup access. Generally, each online school provided each student with a dialup connection to the Internet and 100 hours of Internet access per month. Students who used more than the allotted time were charged by the school for additional time at a preset price.

The lack of high capacity bandwidth resulted in online educators deciding to develop courses that could be reasonably accessed over a 28.8 bps connection. As a result of what teachers saw as less than optimum bandwidth capacity across Alberta, all online schools in this study had adopted the principle of “equal access for all” when developing online course content or making choices about interaction tools.

**Software**

Integrated software packages have proven irresistible to online schools. Over the past four years, MVS and EVS had moved from Web pages to the adoption of First Class for their online school environment. NVS, which had originally developed courses using Web pages, decided early in 1999 to change to WebCT. SVS had adopted IBM’s Lotus Notes software package. Each school had examined a number of software products and selected an integrated product to create the online teaching-learning environment. Ease of use and simplification of posting course content, while also including various pedagogical tools such as student tracking and a glossary, were crucial in adoption of these new software packages. As a result, three online products emerged within the online schools in Alberta – Lotus Notes, WebCT, and First Class.

**Technology support**

In addition to the many tasks associated with teaching, the online teachers provided technology support to many students and their parents. They spent significant amounts of time and energy replying to student inquiries about how to use their computers and how to make use of application software. Consequently, online schools had begun offering orientation sessions for new students. These orientation sessions endeavored to upgrade students and parents in use of various application software packages pre-loaded on school computers.

NVS, MVS, and SVS had attempted to provide support to students through hiring technological support personnel to answer student questions, for example, how to use certain software programs. However, according to 11 teachers at these schools, students still contacted teachers for assistance with computer problems. A few teachers surmised that, because many of the questions involved both technological and pedagogical aspects, it was easier for students to talk to a familiar teacher who could solve the technological problems and associated curricular difficulties. Many teachers were striving to write their own technological support resources which anticipated student and parent questions related to how to operate the computer.

**Major themes**

**Evolution of tasks and responsibilities**

The first theme that emerged from an analysis of the data concerned the evolutionary aspects associated with online education. The term “evolution” is purposely used to denote the addition of new tasks to professional responsibilities and the equally important altering of traditional tasks associated with teaching to become more compatible with the new landscape of online education. This addition of new responsibilities to teaching practices has been previously documented in higher education environments by DeSieno (1995) and Noblitt (1997). They suggested that one reason for poor faculty adoption of information technology was that, for many faculty, technology was seen as more, not less, work. This suggestion was consistent
with the views of interviewed teachers that the greatest change to their professional lives was the expectation that they author online courses while also being concurrently responsible for teaching.

**Convergence**
The theme of convergence arose from analysis of the data; it was not apparent during onsite observations or interviews with teachers. Convergence is used to denote a “narrowing of a gap,” or a “coming together” where thoughts, ideas, and functions begin to lose their separate identity and thereby become more alike. One concrete example is the convergence of televisions with computers or telephones with the Internet. Both are moving from “stand alone” entities into a new product category where each retains its core functions but offers enhanced functionality through convergence (Gates, 1999; Tapscott, 1998).

The convergence of online education includes four aspects:
1. the move to adopt integrated online instructional packages;
2. the adoption of shared instructional design models within schools and between schools;
3. the move towards incorporating both face-to-face and online instructional options; and
4. the development of online databases for sharing disparate student data.

**Attitudes towards technology**
All teachers held strong views about the potential of technology for individualizing instruction. However, their positive attitudes did not preclude teachers from remarking on the gap between their vision and the current reality. First, they reported disappointment with the reliability of computer technology. Problems with student computers were doubly frustrating where teachers were the primary source of technological support for students. Second, teachers expressed frustration with the difficulties of working with multiple versions of a software package and of providing technology support to students using multiple operating systems. The lack of hardware and software standards resulted in incompatible or unreadable files which required teachers to convert and reconvert files when exchanging files. A third problem was the absence of mature integrated content development tools that could work with content delivery software. This hampered teachers in taking full advantage of the potential inherent in online education.

**Relationships with others**
A powerful theme which emerged was a sense that online education had significantly altered teachers’ relationships with others. Teachers constantly remarked on how relationships based upon their previous classroom experiences had changed. For many, “teaching” was seen to be a relationship-building profession.

Throughout onsite observations, informal discussions, taped interviews, and follow-up conversations, teachers constantly returned to the theme of relationships and interactions with others. The freedom to interact with and collaborate on interdisciplinary projects was one of the most rewarding aspects of online education.

**Time pressures**
The final overarching theme arising from the experiences of online teachers was the all-encompassing notion of “time” and how the teachers related their professional activities to their working time. Teachers spoke about how time affected their perceptions of stress, anytime education, and task complexity.

Teachers’ involvement in online education had resulted in heightened awareness about time and professional tasks. When the teachers assessed the many adjustments that they had been required to undertake, the greatest had been to personal time management skills.

The notion of time and how teachers perceived time was often raised during interviews. One of the significant changes to their teaching day was a sense that they were governed no longer by the clock but by the task.

**Results – organizational challenges**
The organizational challenges identified by the interviewed online teachers related to roles and responsibilities, work locations, stress, professional development, and market forces.

**Roles and responsibilities**
All teachers recounted the unease that they felt in adapting to the changing roles and responsibilities. None had been introduced to distance education materials during preservice teacher training and none had been trained in online teaching skills. Also, none had been exposed to practical or theoretical online instructional design models.

Teachers described three areas in which they considered that their roles and
responsibilities had undergone the greatest change:

1. the provision of instructional and emotional support to students;
2. the expectations associated with authoring online courses while maintaining a full teaching load; and
3. the requirement to provide ongoing technological support to students and parents.

All teachers were reluctant to discuss what their employers were currently considering to address the issue of workload. As one teacher explained, online education was a new phenomenon and any criticism of it by online teachers might possibly play into the hands of its many critics.

**Work locations**

One of the many unique features of online education has been the ability for teachers to teach from a variety of physical locations. This has presented employers – school jurisdictions – with issues and concerns that they have not had to confront before. Yet, while the ability of teachers to teach from various locations was technically possible, teachers from NVS and SVS noted how this new-found possibility had given their local school administrators several problems. In particular, teachers from NVS and SVS had encountered resistance from their school districts concerning teaching a portion of their work-week from home. Interviewees described how unprepared their schools were to embrace new opportunities associated with online education. As one teacher stated, school administrators were unable to accept the notion that teachers could work from home and still effectively teach students. According to several teachers from NVS and SVS, school administrators were fearful that if teachers were able to work from home then other employees could make similar demands. Another reason cited by the teachers in explaining the reluctance of their employers to allow teaching from home was the possible cost of equipping home offices for teachers. The issue of working conditions, and especially working locations, was the most sensitive topic which teachers discussed during interviews.

**Stress**

All teachers raised feelings of personal stress related to workload, and all identified three overarching root causes of their stress. First, the current expectations of employers for them to teach concurrently while authoring online courses was extremely stressful. A second stressor was the expectation both from themselves and from parents and students to be accessible on a seven day, 24-hour basis. A third source of stress was the lack of adequate time to handle the many day-to-day responsibilities of marking, answering e-mail, participating in online discussions, building online relationships with students, and performing other online teaching tasks. These were associated with multiple professional responsibilities, task complexity, and family/work responsibilities. The stress of creating new courses was increased because none of the 13 teachers in this study had received formal pre-service preparation in theory or practice related to distance or online education.

Most teachers had extended their workday to include checking e-mail before they went to bed and before breakfast. A universal concern was the effect upon family and friends of excessively lengthening their working time. For example, one MVS teacher acknowledged that the stress of working most evenings and weekends had resulted in his spending less time with his young family. This dedication to work had begun to affect his family life. The strain of working at all hours and the resulting stress upon his family had caused him to consciously limit the time he now spent in his home office. The need to establish boundaries between the demands of teaching online and one’s home life also applied to online teachers who worked from a school.

**Professional development**

All teachers agreed that online schools needed to provide more opportunities for professional development than the few days now scheduled. Teachers felt overwhelmed with the new skills and knowledge that they were required to master in order to carry out their professional responsibilities successfully. If teachers are to provide the level of technological support to students and parents which online schools require, then ongoing professional development opportunities must be provided in these priority areas:

- content development and delivery tools;
- hardware and software systems used by online students; and
- the latest thinking in instructional design and pedagogical matters.

**Market aspects**

The notion that online education exists within a “competitive environment” where market forces pit one online school against another was shared by all interviewees. In recent years, parental choice has been an important aspect of educational reform
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The right to enroll their children in any school or any school jurisdiction in Alberta. To support parental choice, government policy has ensured that provincial funding will be made available to the school jurisdiction in which the child is enrolled.

The combined effect of these efforts has been to provide an incentive for online schools to seek out students from across Alberta and to target those parents and students who would most directly and quickly benefit from online schooling (e.g. rural, small school, and home schooling). Marketing programs had been undertaken by all four online schools in this study. The Internet and its ability to break the bonds between geography and education had created, according to teachers, a “free market” for education.

However, the emphasis on attracting students and retaining students resulted in an environment of “winners and losers”. One teacher recounted how she had been told by district administrators that only a few online schools would survive. This competitive environment had generated a feeling of “protectiveness” among online teachers towards their schools and colleagues.

Introduction of market forces into education had the opposite effect with traditional teachers. All online teachers reported hearing from colleagues that online education was a means by which the collective rights of teachers could be weakened. This produced some strained feelings among online and traditional teachers. The interviewed teachers felt that traditional teachers feared that online education might one day replace or displace them from their current positions. The animosity among traditional teachers to online education had as much to do with the introduction of technology as it had to do with online education, according to two of the teachers.

Concluding comments

Although online school education is in its infancy and is not extensively available throughout the world, it has attracted considerable interest in many countries (Farrell, 1999). The successful experiences of many post-secondary institutions with online education (e.g. Bates, 2000) indicate that it has significant potential for greater use in schools, as an adjunct to “traditional” education. Although especially beneficial for students being home-schooled, online education can have other advantages.

Carefully constructed online courses, which fully utilize digital technology and information, could wholly or partially replace some traditional classroom courses, thereby providing richer experiences and a bridge to post-secondary online education. I am not advocating that online education in schools can ever completely replace education as we now know it, but rather that it should be considered for adoption wherever it can serve as a more effective and efficient method of delivery.

This study showed that online teachers have experienced increased workloads associated with added responsibilities for authoring online courses, providing technological support to students and parents, and continually enhancing their technological knowledge and skills. Although their stress levels were increased, the teachers were very positive about the benefits of online education to students, parents, and themselves. However, in order for online education to be fully effective, computer technology must be more reliable, bandwidth must be increased, professional development must be expanded, student orientation and interaction must receive more attention, and better online instructional design models must be developed.

In my opinion, online school education will increase in terms of numbers of schools, students, and courses that are involved, and more countries will implement it. As online school education increases in scope, sharing of information about practices, benefits, and difficulties experienced among jurisdictions will be essential. Carefully constructed research projects, perhaps involving international cooperation, will help in this endeavor.

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Further reading