The Potential and Problems of Virtual Schooling

GLENN RUSSELL
Monash University

ABSTRACT

Virtual schools enable students to replace some or all of their traditional classes with a virtual equivalent, and their continued growth prompts a reflection on their advantages and disadvantages. Factors such as socialization, pastoral care, learning style, cost, access and equity, views of school education, democracy and computer technology all help to explain the possible consequences of implementing virtual schools. It may be necessary to consider what skills, knowledge and values students should have in a future society before it is possible to decide whether virtual schools are ultimately beneficial.

Introduction: the growth of virtual schools

The Internet is becoming increasingly an essential component of school education in developed countries. Examples of schools' use of on-line education include publication of students' achievements on the World Wide Web and the availability of web-based resources to supplement traditional teaching materials. In some cases, students are able to use a computer to work from home or from other sites outside a conventional school, for part or even all of their schooling. This approach can be understood as virtual schooling. The variations of this schooling mode are related to the amount of face-to-face contact available to students, and the combination of technologies and pedagogies used. In one sense, virtual schools are not new. Predecessors involving technologies such as mail, telephone, radio and television have traditionally provided an opportunity for students who live in remote areas or who are prevented from attending school because of illness or disability.

There is often an imperative for principals, school systems, parents and students to consider the adoption of virtual schooling. The impetus for this

uptake can come from an existing school's existing involvement in information and communications technology (ICT) or dissatisfaction with aspects of traditional schooling. In some cases, education can be provided for students who cannot readily attend conventional schools, or where student enrolments do not otherwise justify the employment of a teacher.

An initial response to virtual schools might be to consider that they are unimportant, as traditional schools continue to attract a very high proportion of student enrolments. However, there are now over 100 virtual schools in the United States alone (Clark, 2001). Research by Clark also indicates that more virtual schools began their operations in the US during 2000 or 2001 (43 per cent) than in the previous four years combined. In Canada, there is also evidence of growing demand for virtual schools. The two-year cumulative growth rate for Alberta virtual schools was 125 per cent (SAEE, 2002). In Queensland, Australia, the Virtual Schooling Service delivers real-time lessons, and there are also virtual schools in Israel and Europe. In addition, traditional schools are experimenting with forms of on-line education designed to supplement conventional modes of schooling rather than replace it.

Virtual schools: problems and possibilities

When computers are used to replace some or all of a student's traditional classes, the range of possibilities and problems involved can be understood in terms of a series of factors. Some of the principal factors for virtual schools are outlined in Table 1, and, in each case, a corresponding positive or negative aspect can be identified. These include socialization, pastoral care, learning style, cost, equity and access, moral distance, web culture, view of school education, democracy and computer technology. These factors are now discussed in more detail in the following sections.

Socialization and family relationships

If students are able to spend more time at home, there is the possibility that family relationships will improve with interaction that is more frequent. Evidence to support this contention is emerging from the area of home schooling. Students involved in home schooling are faring well in the area of social development (Ray and Wartes, 1991), and, increasingly, the Internet is playing an important part in home schooling (Tapscott, 1998). However, one of the distinctions between home schooling and virtual schooling is that parents involved with home schooling accept much of the responsibility for

Table 1
Advantages and disadvantages of virtual schooling

	Possible advantages	**Possible disadvantages**
Socialization	Improved family relationships through more frequent interaction	Long-term effect of computer-mediated schooling on society is largely unknown
Pastoral care	Reduced bullying and harassment when removed from conventional school	Parents may be unable to supervise students effectively at home
Learning style	Favours students who learn independently and are well-organized	Students who require consistent teacher support may be disadvantaged
Cost	Reduced need for buildings. Teachers supplemented by cheaper tutors	Extensive teacher support required Development cost of interactive materials
Equity and access	Reduces disadvantage arising from isolation or disability	Equity concern for those who do not have Internet access
Moral distance	Teachers can concentrate on teaching rather than class control	Reduced teacher control of and responsibility for student behaviour Poorer understanding of students' emotional state and values
Web culture	Community approach to web use can strengthen group cohesion	Corporate approach to web use emphasizes self-promotion and biased information
View of school education	Development of cognitive and intellectual skills	Reduced emphasis in affective domain, values and motor skills
Democracy	Use of Internet allows student interactive communication with many people	Restrictive communication of text-based modes such as e-mail reduces participation
On-line computer technology	Familiarity with on-line computers may assist students in their daily lives	Computer skills and understandings already provided through leisure and school use of computers

the teaching of their children. In contrast, virtual schools usually offer an educational programme in which parents retain a key role in supervision and pastoral care, but the school is responsible for on-line teaching and the provision of virtual materials.

Despite these indications, the socialization provided to virtual-school students may differ from their home-school counterparts. The parents in this latter group have often been found to be doing so for reasons of religion (Stevens, 2001) and have often made the choice to offer home schooling to their children by not accepting paid outside employment. While there is little available information on the background of virtual-schooling parents, their dedication to their child's social development cannot always be assured.

Socialization can be thought of as a learning process whereby individuals orientate themselves in society and construct their identity. For students of school age, the values that are inherent in the socialization process may be formed by interaction with school, peers, media, family and even environments such as shopping malls. School is only one of a number of ways in which students are socialized. However, as Moll (1998: 361) points out, 'public education has become the primary vehicle for the transference of national narratives, of humanistic and of democratic values'. If socialization by way of bricks-and-mortar schools is to be subsumed by agencies such as virtual schools, it is timely to ask what values will be held by future citizens.

Pastoral care problems in traditional and virtual schools

For some students, school can be an unpleasant experience. Del Litke (1998) concluded from a case study of virtual schooling that a number of virtual students preferred attending a virtual school because they had been harassed at their previous 'traditional' school. Elliott et al. (1998) also cite examples of students who were afraid to go to school, or who believed that they might be victimized in the playground or in restrooms. Less obvious is what Epp (1996: 1) refers to as 'systemic violence', where institutional practices and procedures adversely affect individuals and groups. In this way, educational systems can contribute to discrimination and tolerance of abuse. Such examples may be uncommon, but the possibility that they may occur may prompt parents to consider virtual schooling.

However, supervision problems do not disappear if a student is transferred from a traditional school-based context to home. Although computer technology has made it easier for parents to work from home, data from Australian businesses (Lindorff, 1999) suggests that the prevalence of teleworking can be overestimated. Many parents are compelled to leave their homes to earn a

living, and are unable to supervise their children at home on a regular basis. In addition, while some can spare the time to supervise their children, they may be unable to help them effectively. Despite parents' good intentions, some children can remain unwilling to work. In addition, the virtual environment itself is a window to a world in which poorly supervised students can access offensive materials, harass others, or be harassed themselves. While it is tempting to think that students' welfare should improve if they were at home rather than at school, adequate pastoral care and support is not guaranteed.

Learning style: virtual schools do not suit all students

It is likely that virtual schooling will require students to be highly motivated and organized. In most cases, it is unlikely that there will be a teacher or other adult constantly available to keep students on task and assist with their problems. Students will often have to work independently, and, although there may be virtual help available, it may not be as effective as its face-to-face counterpart. Teachers know that students do not all learn in the same way, and that the learning style that suits one may not suit another. Despite this observation, supporters of virtual schools have used slogans such as 'anyone, anywhere, anytime' (for example, Riddle, 2001). These views contrast with an educator cited by Vail (2001), who suggested that only about 10 per cent of the population were suited to a virtual school.

Whether such estimates are correct or not, it would seem the case that students would benefit from counselling to determine their suitability for virtual schools. In an attempt to determine whether virtual schooling would be suitable for individual students, the Outreach School Centre (Outreach, 2001) in Canada provides a virtual questionnaire for prospective students entitled 'Is virtual schooling for you?'. Their list of questions asks about self-motivation, self-discipline, working independently, working alone and effective time management. It would be inappropriate to offer virtual schooling to a student who seemed unsuited to it, but was a problem at a conventional school. Similarly, hidden agendas such as reducing expenditure on conventional schools or assisting the ICT industry should not be allowed to overshadow more pressing concerns about students' suitability for virtual schools. Where students lack the qualities sought in the Outreach questionnaire, the implementation of virtual schooling may disadvantage them.

Balancing reduced infrastructure cost against hidden expenses

Initially, virtual schools appear attractive because they seem to be cheaper. There is a reduced need for buildings, infrastructure, services and related areas

when students work with a computer from home. In some cases, there is also the possibility of using inexpensive tutors rather than teachers. Virtual schools are likely to provide an imperative to both deskill and reskill teachers. There will be a reduced need for educational authorities to pay for skills such as classroom control, but an increased requirement for teaching skills associated with technology.

However, it is possible to underestimate the costs of providing virtual schooling. The development cost of interactive materials can be high. If students are presented with materials that they find uninteresting or hard to understand, the virtual school may not be successful. It may be necessary to look for teams of professional web designers, graphic artists, multimedia personnel and educational technologists. It is also likely, as Farrell (1999) suggests, that there will be an 'unbundling' of many educational functions. The development of learning materials, assessment, registration and administration, which once were carried out by teachers, are likely to become separate tasks. They may well require the development of sophisticated and expensive virtual systems. In addition, other costs such as intellectual property for virtual materials, frequent technological change, and the provision of ICT services to students need to be considered. Virtual teachers will also be an ongoing cost, not only because of their salaries, but also because of the need to provide extensive support and training for them.

Equity and access

Virtual schools reduce the disadvantage for those who previously would have been unable to participate in conventional schooling because of isolation or disability. While it could be argued that traditional forms of distance education such as print-based correspondence schools have also supplied this need successfully for many years, virtual schools offer more flexibility. Students can access web sites and e-mail at any time it is convenient for them, without waiting for the next package of learning materials to arrive.

There are, however, concerns for those who do not have adequate Internet access. Although the national rate of access to the Internet in the USA was 41.5 per cent in 2000 (NTIA, 2000), Blacks and Hispanics had rates of only 23.5 per cent and 23.6 per cent respectively, and lower rates were reported for those with a disability (21.6 per cent), and those living in rural areas (38.9 per cent). Access in schools initially seems better, with 97 per cent of US public schools connected to the Internet (Digital Divide, 2000). Yet, if students are to be asked to work from home, it is likely that the inequality of access reported overall in *Falling through the Net* is also likely to be reflected in participation.

Data related to students' use of computers at home (NCES, 2001) from 1997 indicates a similar trend, in which white non-Hispanic students and those in families with greater incomes consistently demonstrate better access. It is also easy for those in industrialized countries to forget that much of the world does not have adequate access to the Internet at all. For school education, it is reasonable to conclude that some of those who might benefit the most from virtual schooling are unable to participate because of insufficient access.

Moral distance: reflective teaching or reduced control?

With virtual schooling, teachers who are operating at a distance from their students can concentrate on their teaching rather than classroom management. With much of student interaction taking asynchronous forms such as e-mail, teachers are able to reflect on students' responses and refine questions and source materials. However, this opportunity comes at a cost. Virtual schooling leads to reduced teacher control over student behaviour and decreased understanding of students' emotional states compared to face-to-face teaching. In the pre-Internet era, Weizenbaum (1972) used an example of a bomber pilot who operated at an enormous psychological distance from his victims. He argued that although it appeared that humans were no longer responsible for what their machines did, computer scientists were still responsible for their actions and their consequences. More recently, Rubin (1996: 126) has argued that technology can increase the propensity for unethical conduct by increasing the 'moral distance between the act and the responsibility for the act'. The educational counterpart of this argument is that the reduced 'bandwidth' (that is, the amount of information that can be conveyed) that characterizes virtual schools also leads to a moral distancing effect. The full spectrum of body language, facial expressions and visual and auditory cues that teachers expect in a conventional classroom context is usually lacking in virtual schools. Consequently, on-line computer technology reduces teachers' ability to appreciate the ethical consequences of their teaching. Reading a student's e-mail, examining a project submitted electronically, or participating in a video conference may provide insufficient evidence of student understanding and development of value systems.

Web environments: strengthening community or distorting values?

When students use virtual education, they participate in an environment that has many of the characteristics of a culture, including language, custom, convention, beliefs and values. However, there is not one monolithic web culture, and aspects of the virtual environment which students encounter can

be valuable or a cause of concern. Community approach to web use can strengthen group cohesion. Typically, virtual schooling requires participants to interact with others. There may be web sites to visit where information can be obtained, but there is also frequently an opportunity to exchange e-mails with teachers, students and other members of the cyberspace community. Riva and Galimberti (1997) argue that cyberspace is a social space where a new sense of self and community can be built. Indeed, Carlitz (1998) was prompted by the success of a virtual site at the Carnegie Library of Pittsburgh to conclude that the ability of school networks to serve the community may be the key to the future of public education.

However, the web can exhibit an unsuitable corporate approach that emphasizes self-promotion and biased information. Selfe and Selfe (1994) point out that a computer interface that sees the world as a corporate desktop may be inappropriate for those whose world is a kitchen counter top. The very use of computers conditions users into ready acceptance of corporate values. Increasingly, the web is also being seen as a corporate environment where students meet with promotional home pages and biased information. As Fabos (2001) argues, students can produce web sites that promote products, rather than those which promote community links. Such an approach may not seem unusual in Western societies, but it contrasts sharply with practices elsewhere. Wheeler (1998) describes the use of the Internet in Kuwait, and notes that self-promotion is contrary to the prevailing culture. The virtual environment in Kuwait contains minimal information about individuals, and web sites reflect the local cultural imperative of public humility.

School education: cognitive at the expense of affective domains?

Virtual schooling seems to be particularly suited to the development of cognitive and intellectual skills. There is often an opportunity to reflect on educational materials, and responses to questions arising from contexts such as web sites, e-mail, discussion groups and Internet relay chat (IRC). However, there may be a reduced emphasis on the affective domain. As bandwidth decreases (in comparison with face-to-face teaching), there is a corresponding reduction in information available to the student, including body language and social cues. Cyberspatial educational environments transfer control from the teacher to the student and supervising parent. The ways in which a virtual student will learn the values necessary to participate in society will reflect a decreased emphasis on the teacher and traditional school. Nevertheless, there will be a greater focus on student characteristics and on the support that parents can provide. A particular view of school education is implicit in the

implementation of virtual education that challenges conventional thinking. In particular, the movement away from face-to-face teaching prompts a rethinking of what is desirable in education.

The Internet: strengthening democracy or reducing participation?

The Internet is democratic in that it allows students interactively to communicate with many people. For Khan (1997: 5), the web has become 'one of the most important and democratic mediums of learning and teaching at a distance'. It is global, interactive and dynamic. As Kenway (1995) suggests, the Internet provides users with decentralized, distributed direct control over when, why and with whom they exchange information. It is likely that, with appropriate guidance, this capability will contribute to greater student participation, quality and the opportunity for reflection.

Nevertheless, there are two concerns related to participation, involving the technology used, and the tendency of on-line computer technology to result in social atomization. The democratic potential of virtual schooling may be reduced if the technology employed reduces students' participation through flawed communication. Text-based environments such as e-mail lack verbal and body-language cues in comparison with face-to-face teaching. This can result in teachers' and students' missing the nuanced understandings that are typical of conventional classrooms. A teacher in a traditional classroom who sees a bored or puzzled student can adjust her teaching to compensate. It is, however, noteworthy that Del Litke's (1998) research in a virtual school indicated concerns with relationships between teachers and students, and discussion. Teachers felt that they were not always able to relate to virtual-school students as well as their face-to-face counterparts.

The second of these two areas of concern, where people retreat further into their homes rather than participate in their community is referred to by Turkle (1996) as social atomization. Evidence of reduced civic engagement (Putnam, 1995) and declining communication with family members (Kraut et al., 1998) have been linked with technology. However, the evidence for this process, and the involvement of students in it, are inconclusive. Suggestions by Kraut et al. that Internet use could be associated with reduced communication with family members, a decline in the size of the family circle and increased depression have been modified by more recent research. Katz and Aspden (1997) argue that there is insufficient evidence to support pessimistic theories of the effect of cyberspace on community involvement, and Kraut et al. (2002) reported that earlier negative effects had largely dissipated.

On-line computer technology as helping or hindering the development of citizenship

Virtual schools have been seen as justified because they provide some of the understanding of the on-line world needed for employment (Thrash, 2001), and on-line computers have been promoted because 'students will need to become familiar with the Internet to become prepared citizens (Ellsworth, 1994: 5). However, this argument is not convincing, for two reasons. Firstly, students can already obtain valuable computer experiences from the leisure use of on-line computers and from conventional schools. Secondly, rapid changes in technology and on-line environments are likely to result in early experiences being of reduced relevance to adult life.

Conclusion: weighing advantages against disadvantages

Given the trends over the past five years, the number of virtual schools looks set to continue to increase. Their potential to replace face-to-face schooling in parts of an educational system suggests that a discussion on their advantages and disadvantages is timely. However, decisions to implement virtual schools must be based on adequate reflection. Some administrators may be impressed with their apparent ability to solve pressing educational problems. In geographic or subject areas where there is a teacher shortage, virtual schools may be one solution. For students who are ill or living in remote areas, it may in some cases be the only viable solution. Administrators often face inadequate educational budgets, and the opportunity to cut expenditure on school buildings and infrastructure by promoting a virtual alternative may be tempting. There will be profitable opportunities for some, and others will welcome an additional avenue of career advancement.

Evidence is emerging from studies and evaluations that virtual-school students can achieve comparable results to those of conventional schools. A meta-analysis by Cavanaugh (2001) concluded that distance education in the compulsory (K-12) section could be expected to result in achievement at least comparable to traditional instruction in most academic circumstances. Evaluations of California Virtual School (California Virtual School Report, 2000), Florida High School (Florida High School Evaluation, 2002) and Virtual High School (Kozma et al., 2000) indicate generally high levels of achievement and student satisfaction. However, despite such promising indications, the question of whether virtual schools should be seen as potential or problem depends on the perspective of the person posing the question. Given the important social and cultural roles that schools play in society, a

more reflective approach would incorporate a vision of the future. It would be useful to ask what society should be like in a few years' time, and what values and skills its members should have acquired. From this perspective the ideal educational system might well be an amalgam of traditional schooling and virtual schools, in which the learners' needs and abilities can be matched to the best available educational practices.

References

California Virtual School Report (2000). *The California Virtual High School Report: A National Survey of Virtual Education Practice and Policy with Recommendations for the State of California*, available at *http://www.uccp.org/docs/VHS_Report_loures.pdf*

Carlitz, R. D. Z (1998). 'Extending common knowledge', *Internet Research: Electronic Networking Applications and Policy*, 8 (1), 59–69.

Cavanaugh, C. S. (2001). 'The effectiveness of interactive distance education technologies in K-12 learning: a meta-analysis', *Journal of Educational Telecommunications*, 7 (1), 73–88.

Clark, T. (2001). *Virtual Schools: Trends and Issues – Study of Virtual Schools in the United States*, available at *http://www.WestEd.org/online_pubs/virtualschools.pdf*

Del Litke, C. (1998). 'Virtual schooling in the middle grades: a case study', *Journal of Distance Education*, 13 (2), 33–50.

Digital Divide (2000). Available at *http://www.digitaldividenetwork.org/content/news/index.cfm?key=477*, accessed 1 January 2003.

Elliott, D. S., Hamburg, B. and Williams, K.R. (1998). 'Violence in American schools: an overview', in D. S. Elliott, B. A. Hamburg and K. R. Williams (eds), *Violence in American Schools: A New Perspective*, New York, NY, Cambridge University Press.

Ellsworth, J. H. (1994). *Education on the Internet*, Indianapolis, Sams.

Epp, J. R. (1996). 'Complicity and sources of violence', in J. R. Epp and A. M. Watkinson (eds), *Systemic Violence: How Schools Hurt Children*, London, Falmer Press, pp. 1–23.

Fabos, B. (2001). 'Weaving a virtual web: practical approaches to new information technologies', *Harvard Educational Review*, 71 (1), 130–5.

Farrell, G. M. (1999). *The Development of Virtual Education: A Global Perspective,* Vancouver, The Commonwealth of Learning.

Florida High School Evaluation (2002). *The Florida High School Evaluation: 1999–2000 Year-end Report for the Orange County School Board*, Tallahassee, Florida, Center for the Study of Teaching and Learning, Florida State University, available at *http://www.flvs.net/_about_us/pdf_au/fhseval_99– 00.pdf*

Katz, J. and Aspden, P. (1997). *Motivations for and Barriers to Internet Usage*, Morristown, NJ, Bellcore.

Kenway, J. (1995). 'Reality bytes: education, markets and the information superhighway', *Australian Educational Researcher*, 22 (1), 35–65.

Khan, B. H. (1997). 'Web-based instruction: what is it and why is it?', in B. H. Khan (ed.), *Web-based Instruction*, Englewood Cliffs, NJ, Educational Technology Publications, pp. 5–18.

Kozma, R., Zucker, A., Espinoza, C., McGee, R., Yarnell, L., Zalles D. and Lewis, A. (2000). *The Online Course Experience: Evaluation of the Virtual High School's Third Year of Implementation, 1999–2000*, available at *http://www.sri.com/policy/ctl/html/vhs.html*

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T. and Scherlis, W. (1998). 'Internet paradox: a social technology that reduces social involvement and psychological well-being?', *American Psychologist*, 53 (9), 1017–31.

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V. and Crawford, C. (2002). 'Internet paradox revisited', *Journal of Social Issues*, 58 (1), 49–74.

Lindorff, M. (1999). *Home-based Telework and Telecommuting in Australia: More Myth than Modern Work Form*, Caulfield, Monash University.

Moll, M. (1998). 'No more teachers, no more schools: information technology and the "deschooled" society', *Technology in Society*, 20, 357–69.

National Centre for Educational Statistics (NCES) (2001). *Digest of Education Statistics, 2000: chapter 7 – Libraries and Educational Technology*, available at *http://nces.ed.gov/pubs2001/digest/dt427.html*, accessed 1 January 2003.

NTIA (National Telecommunications and Information Administration) (2000). *Falling Through the Net*, available at *http://www.ntia.doc.gov/ntiahome/digitaldivide/index.html*

Outreach (2001). *Is Virtual Schooling for You?*, available at *http://www.rdpsd.ab.ca/osc/virtual/for.html*

Putnam, R. D. (1995). 'Bowling alone: America's declining social capital', *Journal of Democracy*, 6 (January), 65–78.

Ray, B. D and Wartes, J. (1991). 'The academic achievement and affective development of home-schooled children', in J. Van Galen and M. A. Pitman (eds), *Home Schooling: Political, Historical and Pedagogical Perspectives*, Norwood, NJ, Ablex, pp. 43–62.

Riddle, J. (2001). 'Virtual classrooms', *Curriculum Administrator*, 37 (4), 57.

Riva, G. and Galimberti, C., (1997). 'The psychology of cyberspace: a socio-cognitive framework to computer-mediated communication', *New Ideas in Psychology*, 15 (2), 141–58.

Rubin, R. (1996). 'Moral distancing and the use of information technologies: the seven temptations', in J. M. Kizza (ed.), *Social and Ethical Effects of the Computer Revolution*, Jefferson, McFarland and Company, pp. 124–35.

Stevens, M. L. (2001). *Kingdom of Children: Culture and Controversy in the Homeschooling Movement*, Princeton, NJ, Princeton University Press.

SAEE (Society for the Advancement of Excellence in Education) (2002). 'Executive summary of e-learning: studying Canada's virtual secondary schools', available at *http://www.saee.bc.ca/vschoolsum.html*

Selfe, C. L. and Selfe, R. J. (1994). 'The politics of the interface: power and its exercise in electronic contact zones', *College Composition and Communication*, 52 (8), 480–504.
Thrash, R. (2001). 'Virtual school looks to expand base of students', Detroit Free Press, 5 September 2001, *http://www.freep.com/news/education/mvhs5_20010905.htm*
Tapscott, D. (1998). *Growing up Digital: The Rise of the Net Generation*, New York, McGraw Hill.
Turkle, S. (1996). 'Virtuality and its discontents', *The American Prospect*, 24, 50–7.
Vail, K. (2001). 'Virtual learning grows up', *Electronic School* (September), 13–16.
Wheeler, D. L. (1998). 'Global culture or culture clash: new information technologies in the Islamic world – a view from Kuwait', *Communication Research*, 25 (4), 359–76.
Wiezenbaum, J. (1972). 'On the impact of the computer in society', *Science*, 176 (12), 609–14.