

# The Virtual High School

*Potential, Experience, and Prospects*

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## Introduction: Challenges and Chances

Education systems are facing daunting challenges. On one hand, there is a backlog that must be fulfilled, a set of global challenges that must be faced, and an escalating demand for education in both traditional and uncharted territories. On the other is the need to provide the whole spectrum of education services to everyone, anywhere, anytime with a focus on learning acquisition—all under conditions of an ever-expanding base of education clientele and limited physical and human resources.

It is going to be very difficult—if not impossible—for countries to meet the objective of *effective learning, for all, anywhere, anytime*. Our inability to meet this challenge, however, is self-inflicted because we tend to think of linear scaling, that is, using the same model of education (a school constrained by space and time) but more of it and on a larger scale. What we really need is to think differently and radically. The world is experiencing a real revolution in the dissemination of knowledge and in the enhancement of instruction, through the advancement of Information and Communication Technologies (ICTs). This is the third revolution in learning, the first being the invention of the written language and the second being the development of moveable type and books. ICTs make both the content of learning *and* the interactions of high-quality (and other) instruction affordable and available anytime, anywhere.

The potential of ICTs to reach large audiences was tapped initially in the late 1800s, when correspondence courses became an alternative means to provide education for individuals who could not attend regular schools due to geographical, social, or cultural barriers. Experiments with radio broadcast started in the early 1900s, and, in 1924, the British Broadcast Corporation (BBC) began to air educational programs. Since then, radio has been instrumental in reaching scattered and rural populations. Although experiments with televised broadcast began in the 1930s, it took another 20 years for television to become popular. Two of the most prominent examples are *Telecurso* in Brazil and *Telesecundaria* in Mexico.

Computer-related technologies began to make inroads 30 years ago and are changing the concept of time and space rapidly. There are now virtual high schools, virtual universities, and virtual programs provided by campus-based universities. About 60% of U.S. universities provide virtual education programs. In addition, open universities expand opportunities to populations that traditionally have been excluded from education due to geographic, cultural, and social barriers: minorities, girls, rural populations and the elderly.

## Character and Characteristics

Virtual schools generally provide all the services that a conventional school provides except for physical facilities. Students enroll in courses, have teachers, do homework and interact with students and teachers. Teachers manage the learning process through a learning management system, address questions, give feedback, evaluate homework, tutor, confer with parents, etc.

There are presently hundreds of virtual schools predominantly in the US, but also in Canada, Australia and UK. They are run by states, colleges and universities, and profit and non-profit entities. It is important to distinguish between web sites that provide individual courses and entities that offer a complete online program through which a student can obtain a diploma.

Existing virtual schools vary in terms of **scheduling and interaction**.

- Some schools offer scheduled synchronous courses that are offered at particular times. These schools use new technologies to provide real time interaction between the teacher and students.
- Most virtual schools offer unscheduled asynchronous courses that are available on the web for students to access. In these classes exchange between students and teacher and among students takes place through email, in a chat room or on a dedicated listserv.

Virtual education covers a variety of approaches:

- Full self-study program provided via the internet and may be supplemented by printed materials

- Full self-study program supplemented by interaction with a tutor and other students through email and chat rooms.
- Structured program of internet-based materials and tutors plus physical study centers where students can meet with tutors and other students, and make use of library facilities.

## Potential and Purposes

A virtual school has the potential to serve many purposes:

### *1. Expanding Educational Opportunities*

It is unrealistic to assume that conventional delivery mechanisms will provide educational opportunities for all, in affordable and sustainable ways. Virtual schools can overcome geographic, social and infrastructure barriers to reach populations that cannot be normally served by conventional delivery systems. Additionally, they provide feasible, efficient and quick expansion of educational opportunities.

### *2. Going to Learners Who Cannot Come to School*

Virtual schools provide opportunities to students who are unable to attend regular schools because of a wide range of reasons including travel, medical conditions, or careers. . For those who need to balance studies with work and family obligations—full- or part-time workers, parents of small children, homebound individuals—this flexibility of online education may be most cost-effective for them.

### *3. Offering Second Chance Opportunities*

Virtual schools offer opportunities to students who have been suspended from their regular schools for long periods because of serious violation of the rules, as well as to students who need remedial work during summer vacations as a condition for promotion to the next grade level.

### *4. Supplementing Conventional Schools*

Courses provided by virtual schools may supplement the offerings of conventional schools in many ways:

- To start with, virtual courses eliminate the premise that learning time equals classroom time. To avoid overcrowded classrooms, a school may adopt a *dual-shift system* without reducing its students' actual study time. Students may attend school for half a day and spend the other half involved in virtual courses at home, in a library, at work, or in another unconventional setting.
- For areas with low population density, *multigrade schools* become viable alternatives. Students can follow online courses provided by a virtual school at their individual paces, while the teachers can tutor, facilitate the learning process and attend to those who need individual attention.
- Virtual schools can provide courses that *small rural or urban schools* cannot offer to their students because it is difficult for them to recruit and retain teachers, particularly to teach mathematics, science, and foreign languages. Schools that don't need a full-time physics or English teacher can have their students follow virtual courses and share one "teacher" among several schools. Alternatively, retired or part-time teachers who live hundreds of miles away can be used to teach the online courses.
- A virtual high school may meet the needs of *high achievers and gifted students* by offering enriched courses and advanced self-study programs.
- Virtual school courses are usually prepared by highly qualified specialists and experts and exploit the potential of multimedia. Using them in conventional schools to supplement regular courses *enriches the teaching/learning process*, by offering high-quality instructional materials, providing opportunities for independent pursuit of knowledge - on demand, connecting learners with other learners to exchange information and perform collaborative programs, and bringing the wide world into the realm of the learner.

## Substitute or Supplement

Two different questions are at issue here. One is the issue of expanding reach, where virtual education programs try to serve a clientele whose needs are difficult or impossible to meet through on-site learning. The other is whether virtual education can be a substitute for on-site, campus-based institutions. On-site institutions that are vibrant with teaching/learning activities, exploration, and intellectual discourse are irreplaceable. The personal contact with peers and with teachers in a good on-site institution is incomparable in its richness. Virtual schools, however, may be a welcomed alternative to low-quality on-site schools where the focus is on lecturing, memorization, and drill, and where there is no interaction, exploration or inquiry. Virtual schools can certainly provide more reliable learning materials than inferior institutions – generally at lower capital and recurrent unit costs.

On the other hand, virtual education should not be a poor replica of conventional education. With the potential of technology, it could be a prototype of a more exciting and effective model. Classrooms are constrained environments, and conventional instructional materials are static. If virtual education programs are taped classrooms, digital texts, and PowerPoint transparencies, then we are missing out on the tremendous potential of technologies that can animate, simulate, capture reality, add movement to static concepts, and extend our touch to the whole universe. The challenge, therefore, is to align learning technologies with sound pedagogy and instructional design and to try to do with virtual systems of delivery what could not be done with conventional modes.

## Examples and Experiences

Below are some examples that demonstrate different uses and providers of virtual high schools:

### 1. *Choice 2000*<sup>1</sup>

**Choice 2000** is one of the original charter schools in California. It is a completely on-line and fully accredited secondary school, covering grades 7-12.

The instructional platform utilized by Choice is interactive. Students attend classes daily at set times. Lessons are presented both visually and verbally. Students and teachers are able to interact directly in this virtual environment, hearing and answering questions and participating in discussions of what appears on the screen. Students must provide their own computer. The maximum class size is 20 students per class, with the average being 13 students per class.

### 2. *The Alberta Distance Learning Centre (ADLC)*<sup>2</sup> *in Canada*

ADLC provides a distance education program that leads to a high school diploma. The ADLC uses both asynchronous and synchronous on-line learning methods.

Online students are assigned to in-house Distance Learning Teachers who initiate contact with them to provide coaching, monitoring and tutoring opportunities for each student on a regular basis. Students work from a combination of Online and Print materials. They complete their assignments and generally submit them electronically. Expected turn around time for student work is one to three days. In addition, students receive multiple assessment opportunities beyond regular assignment activities such as quizzes, unit test, and possibly a mid-term exam placing less weight on the final exam and bettering the students' potential for high achievement.

For the predominantly asynchronous courses, students communicate by such Internet media as e-mail, online chat, threaded discussions, audio conferences, and shared whiteboards, as well as by telephone, print, and fax machines. For synchronous courses, live classes are conducted over the Internet. The entire

<sup>1</sup>Summarized from: <http://www.choice2000.org/>

<sup>2</sup> Summarized from: <http://www.adlc.ca/home>

class “meets” at a regular time and students are able to communicate with each other using microphones, drawing tools and even sharing computer software.

### **3. *The Open School in British Columbia*<sup>3</sup> (Canada)**

The Open School in British Columbia (BC) provides asynchronous learning opportunities to high school students in the province. The online courses use WebCT platform and are developed by a team of teachers, instructional designers, web developers and education specialists who work together to produce ready-to-use, K-12 courses and resources that meet BC Ministry of Education curriculum guidelines. Unfortunately though, a review of a sample course shows that it is basically a hyperlinked text. See

[http://www.openschool.bc.ca/online\\_login.html](http://www.openschool.bc.ca/online_login.html)

### **4. *Virtual School Service in Australia*<sup>4</sup>**

In Australia, the only full-service virtual school is the Virtual School Service. It provides online classes to Queensland’s high school students in subject areas that regular high schools have difficulty offering. These subjects include Economics, Mathematics, Japanese, Modern History, Information Processing and Technology, and Physics. To review sample activities go to:

[http://education.qld.gov.au/virtualschool/html/students/infocenter/study\\_activities.htm](http://education.qld.gov.au/virtualschool/html/students/infocenter/study_activities.htm)

### **5. *PBS – High School Equivalency Online Program*<sup>5</sup>**

The General Educational Development (GED) Testing Service develops and distributes the GED Tests. These are basically designed to provide a “reliable vehicle through which adults can certify that they possess the major and lasting outcomes of a traditional high school education.” More than 860,000 adults worldwide take the GED Tests each year. More than 95 percent of U.S. employers consider GED graduates the same as traditional high school graduates in regard to hiring, salary, and opportunity for advancement.

PBS LiteracyLink offers learners a GED Connection package to help them prepare for the GED test:

- 39 video programs, broadcast by Public Television stations or available as videotapes
- student workbooks covering Reading/Writing, Social Studies/Science, and Math
- interactive online learning modules, with practice tests, online activities and quizzes for each GED lesson.

These integrated multimedia components work together to make studying for the GED easy for a busy adult who needs to work at his or her own pace. In addition to the online modules, learners can view the lessons on their local public television stations, record these lessons, and use the videotapes to study at home. Many local adult education programs, community colleges, one-stop career centers, or libraries have GED Connection videos and books available, with classes and teachers to help. Online teachers from several states are available to coach adult learners in virtual classrooms.

### **6. *Florida Virtual School*<sup>6</sup>**

The Florida Virtual School (FLVS) is a statewide, internet-based, public high school offering rigorous curriculum online. Enrollment for 2002-03 exceeded 10,000. Courses are free to all Florida students and are available to public, private, and home school students. Non-Florida students can enroll in FLVS on a tuition basis. FLVS is offering 75 courses during the 2003-04 school year, including honors courses and 11 Advanced Placement courses. FLVS course grades are accepted for credit and are transferable.

All FLVS courses are delivered over the Internet. To help assure student success with virtual learning, a variety of web-based, technology-based and traditional resources are provided. Teachers communicate with students and parents on a regular basis via telephone, email, online chats, instant messaging, and discussion forums. For course demonstration go to: [http://www.flvs.net/global\\_connections/flash\\_courses/index.htm](http://www.flvs.net/global_connections/flash_courses/index.htm)

<sup>3</sup>Summarized from: <http://www.openschool.bc.ca/>

<sup>4</sup>Summarized from: <http://education.qld.gov.au/virtualschool/html/index.htm>

<sup>5</sup> Summarized from: <http://litlink.ket.org/wesged.iphtml>

<sup>6</sup> Summarized from: <http://www.flvs.net/>

FLVS is currently working to assemble a “Virtual School Sourcebook” designed to offer readers a resource for developing and managing a virtual school learning enterprise. It will highlight FLVS “lessons learned” along with key issues that should be addressed when undertaking a virtual school initiative. It is also willing to license its courses to other schools and districts.

### ***7. The Babbage Net School<sup>7</sup>***

The Babbage Net School is a private virtual High School offering on line, interactive courses in English, Math, Science, Social Studies, SAT, Foreign Language, Advanced Placement, Music, and Art. These courses are taught by certified teachers in a virtual classroom featuring interactive audio, synchronized web browsing and a shared whiteboard. The courses cover the full range of high school level subjects including enrichment courses, foreign language and Advanced Placement courses. The **Babbage Net School** also offers in-service courses for teachers.

The classes meet in a "classroom" at a specific time. Only registered students are allowed into a class. The virtual class is extremely similar to classes given in a traditional brick and mortar school building. A certified, experienced teacher is in control of the class and guides the students through each lesson. The classes meet at assigned times. The students have a textbook. The teacher talks to the class and students can be 'given the floor' so they can also talk to the class. Some class material is shown to the class as web pages using a synchronized web browser. Other material is displayed on a whiteboard which functions as a blackboard in a traditional classroom. Students can raise their hand to get the teachers attention. Or, students can ask questions by using text chat. The teacher can have a student answer a question by talking to the class or writing on the whiteboard. So, the virtual class is fully interactive. Students can also interact asynchronously with the teacher or their classmates by using email.

### ***8. The Virtual High School (VHS)***

VHS is a research-based project administered by a partnership between the Hudson Public School (Massachusetts, USA) and The Concord Consortium. Through the Internet, participating schools can offer new courses without the need for increasing enrollment to justify the expenses. The project functions as a cooperative. Each participating school contributes at least one teacher and a site coordinator to the project, and, in exchange, the school can enroll a pre-established number of students in any VHS courses. A site coordinator helps to recruit the students and teachers, ensure that the technology is available and functioning, and provide support to the students. The advantage of the cooperative system is that the major cost of a project –personnel - is shared among all participants.

Before developing the online course, the teacher must complete a graduate-level course on design and development of network-based material. Each online course may take a year to develop, and must be approved by the school principal and VHS central staff. More recently, an Evaluation Board has been formed to define standards of quality for the courses. The courses, mostly one semester long, are taken for credits as core subject or elective. The courses are mostly interdisciplinary and use student-centered, hands-on instructional strategies that emphasize collaborative learning and inquiry. Students can take the course at home or during school time. In this case, the VHS coordinator functions as a tutor. The online courses are housed in a LearningSpace educational environment that enables teachers to deliver lectures, moderate student discussions, conduct assessments, and receive students' work. Students can submit work individually or in groups and can participate in discussions with their peers.

The first semester of the project was hampered by a series of technical problems and the lack of participants' experience with the process. For instance, because staff underestimated the server capacity that would be needed to support 350 students online, the courses were offline for a few weeks. As time passed, technical difficulties decreased, the teachers learned how to manage the logistics of online teaching, and students improved their understanding of the responsibility and persistence necessary to participate in

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<sup>7</sup> Summarized from: <http://www.babbagenetschool.com/>

distance learning. During the 1997-98 school year, the project had 30 participant schools and offered 30 courses to 700 students. In 1999-2000, the number of schools grew to 87, and the project offered 94 courses to more than 2,500 students. It is estimated that the project will serve more than 6,000 students over the five-year grant period.<sup>8</sup>

## Promises and Prospects

Virtual schooling is still in its infancy. Few believe that it will be the dominant model for secondary education. It may, however, offer an opportunity to broaden the scope of secondary education along the space as well as the time dimensions.

The promise is appealing but the prospect is not automatic. The issue is not the technology of instruction and delivery; it is the type and quality of education involved. No technology can fix a bad educational philosophy or compensate for bad practice. There can be bad virtual schools as there are bad conventional schools. Virtual education is not about the Internet, it is about education.

Virtual schools have great potential but there are basic issues that must be faced and treated during planning and implementation.

### ***1. Online Courses Require High Expertise to Develop***

To fully exploit the potential of ICTs, online courses must combine good instructional design, multimedia tools, and interactive techniques. They must be developed by highly trained and specialized teams to achieve economies of scale and expertise.

### ***2. Online Instruction Requires Special Skills***

Teachers who are effective in face-to-face teaching are not automatically capable of facilitating an online course. They need to be trained in the specialized area of online teaching. This includes an understanding of the technology that supports the course and the various tools that the teacher can use to enhance it, such as video, audio, use of online chats and discussion spaces, groupware for common work on documents, etc

### ***3. Online Learning Requires Self-Discipline and New Set of Tools***

Without the physical environment of the classroom, students should be intrinsically motivated and able to exercise self-discipline and time management. Many may have difficulty functioning without face-to-face peer interaction and teacher feedback. In addition, they need to know how to use the technologies, how to manipulate the applications, how to access information and how to assess and assimilate information.

### ***4. Virtual Schools Require Management and Support Systems***

Virtual schools have management needs similar to those of conventional schools with the exception of management of physical facilities. But they require additional management and support systems to develop and run the online environment. Above all, they need to maintain and support the technical infrastructure needed for instruction, interactivity and management of the learning portfolios.

### ***5. Virtual Schools Cost Money***

Although virtual schools may be less costly than campus-based schools, they still cost money to create a virtual platform, develop and test courses, train teacher and pay their salaries, manage and maintain the system, and continue updating the content, the human resources and the technology.

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<sup>8</sup> Espinoza, C., Dove, T., Zucker, A., & Kozma, R.B. (October 1999). *An Evaluation of the Virtual High School After Two Years of Operation*. SRI International. Available at: <http://vhs.concord.org>; Tinker, R. (1998). *The Virtual High School: A Scalable Cooperative*. Available at: <http://vhs.concord.org>; and Yamashiro, K., & Zucker, A. (November 1999). *An Expert Panel Review of the Quality of Virtual High School Courses: Final Report*. SRI International. Available at: <http://vhs.concord.org>.

### ***6. Virtual Schools Must be Treated as Innovations***

Virtual education is a radical innovation and should be treated as such. Innovations require building a solid base of knowledge and commitment, interacting with interest groups, generating and testing different options, experimentation, planning for large-scale implementation, critical mass application, and a mind open to modification and adjustment.

In addition, virtual education faces a set of constraints that should be recognized early in the planning process and dealt with before implementation is commenced. These factors include availability of affordable physical infrastructure (including telecommunication and broadband internet), quality contentware, financial resources, and legal frameworks – including issues of accreditation, certification and intellectual property.

### ***7. Virtual Schools Need Collective Efforts***

Because of the nature and cost of virtual schools, a collective effort by many countries to establish and support virtual institutions has many advantages:

- The developmental up-front component of virtual education is high. Distributing the initial cost across countries achieves linear economies of scale. Moreover, serving all the countries increases the size of the clientele and thus lowers the unit per student cost.
- The development of multi-media materials – the backbone of virtual programs – requires highly specialized expertise, equipment and software. Countries, working together, will need only one team of experts, spread over the countries, and will not duplicate the required physical facilities.
- Students served by a regional virtual institution will interact and collaborate across country borders, and thus strengthen their regional ties.

### ***8. Virtual Schools Are Susceptible to Fraud***

"Diploma mills" which have long sold fake degrees by mail now are prospering on the Web. As virtual education expands worldwide, they become the next target of educational predators who are ready to pounce on the vulnerable.

It is difficult for an individual to determine the quality and suitability of virtual courses. Some providers offer demo courses to review but there is no guarantee that the regular courses are of comparable quality. Accreditation of virtual schools by academic agencies, states and governments may be the safest measure.