

Breaking New Ground: The Virtual High School

Imagine a small rural high school offering its students such courses as Stellar Astronomy, Atmospheric Interactions, and Contemporary Irish Literature. Imagine teachers being able to devise their own courses like, Ethnobotany, Music Composition, Screenwriting Fundamentals, or 101 Ways to Write a Short Story. Then imagine access to unlimited informational resources. School of the next millennium? Yes, and its here—the Virtual High School (VHS).

VHS, the first large-scale project to create Internet-based courses at the high school level, provides a low cost means of augmenting the range of courses a school can offer without expanding enrollment, and offering both students and teachers new opportunities for learning. “The Virtual High School is an extraordinary project that is having a positive impact on thousands of high school students and hundreds of educators in schools across America,” Bruce Droste, Director of VHS recently explained. “VHS is using the best of educational technologies to give students and teachers access to resources, curriculum, and training of the highest quality, and to prepare educators and learners to be skilled and confident participants in an increasingly technological world.”

What is the VHS?

The Virtual High School (<http://vhs.concord.org>) is a cooperative of more than 125 high schools across the United States that offers NetCourses taught by teachers for students in the cooperative. Each school contributes teachers who, with the help of teacher mentors, instructional technology experts, university faculty, and businesses, design and offer innovative courses over the Internet. Each school in the cooperative can enroll 20 students in these NetCourses for each section of a teacher’s time it contributes to the pool. This arrangement allows schools to offer a range of courses usually found only in large high schools. Quality is maintained by requiring each virtual teacher to successfully complete a graduate-level professional development NetCourse on the design and development of network-based courses. Now entering its last year of a five-year grant, the VHS project has now turned from concept development to large-scale implementation. The cost model of the cooperative fits the way schools are financed, because all members of the project share the major expenses—faculty salary—and there are few direct costs. As the Virtual High School gains popularity, schools can contribute more teachers, enroll more students, and help make a wider variety of courses available to the student body.

Its growth is impressive. The Virtual High School was conceived and developed at The Concord Consortium, in Concord, Massachusetts as part of its ongoing research and

development on innovative educational applications of technology. Funded in 1997 by a five-year Technology Challenge Grant from the U.S. Department of Education to Hudson Public Schools with a subgrant to The Concord Consortium. VHS began with 35 courses and 35 participating schools in 12 states. In 1999–2000, with 87 courses online and more than 1,800 students enrolled, VHS turned theory into practice and created a new educational environment that broadens curriculum and teaching practices nationwide. Next year, VHS anticipates enrolling 4,000 students in 30 states who will be enrolled in 200 VHS courses. Three hundred and fifty teachers will be in training or teaching VHS courses.

“Our goal was to design online courses that were compelling, challenging, and personal,” says Sheldon Berman, co-principal investigator of the project. “VHS was not meant to be just a good use of technology, but rather a new medium that merged the best in technology with the best in instructional methods,” he explains. “Four years into the Virtual High School Cooperative, we have exceeded all our expectations.”

VHS Courses

VHS NetCourses start with proposals created by prospective teachers. Principals approve proposed courses, which are then forwarded to the VHS central staff at Hudson Schools and The Concord Consortium. Final selections are made to create a balance of kinds of courses in which students can enroll.

Most of the NetCourses are special electives that would normally be unavailable at these schools. Selected courses from the 2000–2001 VHS Catalog include these offerings: Aeronautics and Space Travel, All History is Local History, Anatomy and Physiology, AP European History, Bioethics Symposium, Chemistry II, Earth Dynamics, Designing Structures and Understanding Stress, Fractals, Interior Design, Investing in the Stock Market, Military History and Theory, Math You Can Use in College, Screenwriting Fundamentals, and A Shakespeare Who-Dun-It.

VHS courses cover either one semester or a full year, based on an asynchronous, scheduled model structured around online discussion groups. Due to its asynchronous nature, students can access the network anytime at school or at home to read assignments, participate in discussions, and submit completed work. At the same time, courses are carefully scheduled with all the students in a course participating in the same activities and thinking about the same issues. Teachers are trained in structuring and moderating these online discussions. Without this emphasis, online courses can become conversations between individual students and the teacher thereby generating an overwhelming

volume of posts. This maximizes the value of the online discussions and helps ensure that students can learn from each other and construct their own understandings.

Most VHS courses follow a weekly rhythm that includes a major topic, assigned activities, online discussions, and student contributions. Activities have, for instance, included readings, lab experiments, music composition, critiquing a video, locating Web resources, and taking a poll. A master schedule for each course dictates these events and expectations in detail, to help ensure that all participating students are able to make meaningful contributions to the class.

VHS Students

The students in VHS are drawn from schools in the VHS Cooperative. For pupils seeking intellectual challenges, there are extensive course offerings. By joining the VHS Cooperative, it is far more likely that students with specialized interests will find courses that match these.

Also, VHS is bringing these benefits to more than just a select group of participants: VHS students and teachers represent a spectrum of different ages, ethnicities, backgrounds, learning abilities, and educational experiences. "VHS is of special interest to us because it gives our Deaf students the opportunity to participate in classes with hearing students and teachers on a fairly equal basis without the need for interpreters," reported Joyce Barrett, a teacher at the Model Secondary School for the Deaf. She explains that VHS "allowed them to feel comfortable interacting with the hearing students in their class."

The VHS students receive other benefits as well. "Students who have taken a VHS course find that the experience has helped them become independent learners and capable technology users," reports Bruce Droste. "They pass these skills on via daily interactions with peers, family members, and even teachers."

VHS Teachers

Most teachers participate in VHS because they value the opportunity to teach a specialty course for which there would be insufficient enrollment in their own school. Also, VHS gives them an opportunity to use technology in education and gain technological skills. Teachers in the Cooperative have their normal teaching load reduced so they can lead an online course. Consequently, their total teaching load is unchanged, just partly shifted from local to distant students.

Each of the VHS educators has authored the NetCourses they teach. To learn to do this, each has successfully completed a comprehensive, graduate-level course called the Teacher Learning Conference (TLC). Itself a NetCourse, the course uses the same technology that teachers will use in their NetCourses. They have a chance to experience, as students, the environment their students will experience.

"Teachers who have had access to this professional development course find that they are bringing new technology skills, new teaching strategies, and a revitalized

The success of VHS is heard through many of the participants about their own experiences as teachers and as students, sometimes as both.

"VHS is not about using technology for the sake of using technology. VHS is about offering students unique and alternative learning experiences that not only supplement, but transcend their normal high school experience. It is far beyond kids learning content over the internet; it is about people—connections and developing a sense that wherever you are in this expansive country we are in this life together. VHS is a place where kids from all over the country, from all sorts of backgrounds come together and share in learning."

— *John Dye, VHS teacher, History and the Silver Screen, Dublin Scioto High School, Dublin OH*

"What? A class over the Internet? That's cool!" That was the first thing I thought of when I heard about the course. [The teacher's] methods of teaching swept me away. I was overwhelmed by the substantial amount of curriculum, but it was the most helpful work I have ever done in an English class."

— *Sarah, VHS student, John F. Kennedy High School, Fremont CA*

"I'd say that so far the best thing about VHS that has helped me and my students is the practical experience that I have gained using the Internet as a research tool. I think many people (students, parents, and teachers) think that if you have a project, the internet will in some magical way do it all for you while you sit back and watch. The other misconception is that just because information is on the Internet, it is valid. I'm really learning how to use the Internet and have been able to pass this on to my students and fellow teachers."

— *Jim DeProfio, VHS teacher, Perspectives in Health, Lowell High School, Lowell MA*

"Participation in VHS has been a real catalyst of change our school. Not only has it provided our students with courses more specialized and advanced than those offered at far more affluent secondary schools in our vicinity, it has also brought us recognition which is launching additional technology research projects into our classrooms. One other consequence, [our school] was authorized to proceed with a restructuring effort that will create the first Multimedia/Technology Magnet School in the Silicon Valley."

— *Jerry Lapiroff, VHS site coordinator, John F. Kennedy High School, Fremont CA*



enthusiasm for teaching back into their local classrooms, thus passing the benefits of their experience on to countless additional students and colleagues,” Droste said in recent testimony to Congress.

“I want everyone to know that this year [1999] has been the best professional de-

velopment year for me in 27 years of teaching” wrote Richard Clevenstein, a VHS teacher in Folsom, Pennsylvania. “I not only feel part of a new wave of education but I feel that I have re-fallen in love with my subject—biology.”

Because an online course is a new medium it requires re-evaluating how courses are taught and how students learn. As a result, the TLC NetCourse covers all aspects of learning from the perspective of online courses.

“...The TLC training course has given me a shot of adrenaline at a time when I had begun to look ahead favorably toward retirement. Imagine that—44 and ready to call it quits. No more,” explained Wanda Steckley, a teacher in Griffin, Georgia. “TLC has taught me to ‘rethink’ my teaching strategies, and my current students are reaping the benefits. Incredible. The computer and TLC has given me a new perspective on Shakespeare.”

VHS Administration

Each school has an on-site VHS project coordinator. This person helps recruit the students and teachers, ensures that the technology is available, and meets with the students enrolled in VHS NetCourses. Many schools schedule all their VHS students into a computer lab at the same time under the supervision of the site coordinator. While not expert in the range of the specialized courses students may be taking, the site coordinator can help with technical problems, facilitate student thinking, and can remind students of due dates.

VHS Economics

The VHS project is a distributed cooperative in which schools barter courses for enrollment. The major cost—teaching personnel—is shared. For each school, the direct instructional expenses balance out. However, there are real costs to participation. First, there is the tremendous cost of teacher professional development in the year long TLC. This is often borne by the teachers, but increasingly, schools are giving teachers enrolled in the TLC a reduced load, thereby generating an opportunity cost for the school. The on-site coordinator represents a major cost, too. Coor-

dinators report that their VHS activities require 25% of their time. Finally, there are a number of central functions that are expensive: teacher and course selection, course review and oversight, operating the TLC, student registration, coordinating the on-site coordinators, and running the servers.

As a result of their success, The Concord Consortium and Hudson Public Schools are continuing VHS beyond 2000-2001, the last year of the U.S. Department of Education grant. The VHS cooperative will remain a collaborative effort and will be expanded through a member fee that will cover the operational expenses, estimated at \$6000.00 per school.

VHS Future

In addition to the changes in funding the program, The Concord Consortium is also expanding the TLC options. They are creating an abbreviated version of the yearlong VHS teacher professional development course for those who want to teach existing online courses, a less demanding self-paced, moderated professional development course for teachers interested in online instruction, and training modules for online and face-to-face classes. In addition, new teachers who complete a TLC short course during their pre-service training, with extensive training in online pedagogy, will be able to teach a VHS Netcourse during their first year in a high school classroom

Excited about the potential and growth of VHS, Sheldon Berman anticipates that VHS will offer the widest range of courses available to secondary students anywhere. “Most importantly, as we move from one point in our history to the next, we believe that VHS will continue to stimulate educational improvement, both technological and instructional.”

References

The Virtual High School™: A Scalable Cooperative, Robert Tinker, co-Principal Investigator, October 1998, The Concord Consortium, Concord, MA.

What's Next for VHS?, Sheldon Berman, *The Concord Consortium*, Vol. 4, No. 2, Spring 2000, The Concord Consortium, Concord, MA.

Early Childhood, Youth, and Family Subcommittee, Education and Workforce Committee, U.S. House of Representatives, Testimony of Bruce Droste, Director, *Virtual High School, A Technology Innovation Challenge Grant Program*, U.S. Department of Education, May 11, 1999.