
EDUCATION**SECTOR** REPORTS

June 2007

LABORATORIES OF REFORM:

Virtual High Schools and Innovation in Public Education

By Bill Tucker

TABLE OF CONTENTS

Acknowledgements	ii
Introduction	1
The Virtual School Landscape.....	1
Personalized Learning	2
The End of the Lone Teacher	4
An Entrepreneurial Climate.....	5
Challenges Remain.....	6
Reform at Scale?	7
Policy Recommendations	10
Appendix.....	13
Endnotes.....	14

ACKNOWLEDGEMENTS

Research assistants Ethan Gray and Rebecca Shinnners provided invaluable assistance with the research and ideas contained in this report. Thank you also to my Education Sector colleagues, specifically Kevin Carey, Abdul Kargbo, Andrew Rotherham, Renée Rybak, Elena Silva, Robin Smiles, and Thomas Toch, who provided assistance with the policy recommendations, editing, and production of the report. Finally, thank you to the dozens of educators, school leaders, policy analysts, and experts who graciously offered their insights and knowledge to me throughout the research and writing of this report.

ABOUT THE AUTHOR

BILL TUCKER is Chief Operating Officer at Education Sector. He can be reached at btucker@educationsector.org.

ABOUT EDUCATION SECTOR

Education Sector is an independent education think tank based in Washington, D.C. It is a nonprofit and nonpartisan organization devoted to developing innovative solutions to the nation's most pressing educational problems. The organization seeks to be a dependable source of sound thinking on education policy and an honest broker of evidence in key education debates in Washington and nationally.

There has been no shortage of solutions for improving the nation's public schools. School leadership, teacher quality, standards, testing, funding, and a host of other issues have crowded reform agendas. But an important trend in public education has gone largely unnoticed in the cacophony of policy proposals: the rise of a completely new class of public schools—"virtual" schools using the Internet to create online classrooms—that is bringing about reforms that have long eluded traditional public schools.

Virtual schools served 700,000 students in the 2005–06 school year, mostly at the high school level.¹ Although that is only a fraction of the nation's 48 million elementary and secondary students, it is almost double the estimate of students taking online learning courses just three years earlier, and it's a number that is likely to continue to rise rapidly.² In 2006–07, Missouri, North Carolina, South Carolina, and South Dakota became the latest of the two dozen states to establish state-run virtual high school programs.³ And in Michigan, the legislature went a step further with a mandate requiring students to complete an online learning experience to graduate from high school.

Online learning, of course, is not new. Over 90 percent of public colleges and universities offer online courses, and high schools have offered virtual learning for over a decade.⁴ Though online education is controversial in some circles, research shows that it can be as effective as traditional classroom learning. The small body of research focused on the effectiveness of K–12 virtual schooling programs supports findings of similar studies on virtual courses in higher education. They find "no significant difference" in student performance in online courses versus traditional face-to-face learning.⁵

But the new, publicly funded online schools are proving to be more than merely another delivery system for students. In a wide range of other industries, and now, increasingly in K–12 education, the Internet has enabled deep structural changes. In each case, new organizations developed alternative management structures, distribution methods, and work models.

iTunes, Apple Computer's immensely popular music software, for example, has radically changed the way people collect, listen to, and share music. With its

online store and a management system for listening to music and watching videos, consumers, whether music enthusiasts or casual listeners, are no longer confined to the selections in stores. Nor do they have to purchase an artist's pre-determined collection of songs on an album; instead, they can personalize their music experiences. As a result, the entire music industry has changed, and most noticeably in retail, where brick-and-mortar stores are finding new ways to integrate online music options into their more conventional settings.⁶

Virtual schooling is driving the same sorts of transforming changes in public education. While the importance of effective teaching and learning has not changed, the Internet has enabled educators to significantly alter the experience of schooling. Virtual schools are personalizing student learning and extending it beyond the traditional school day. They've created new models for the practice of teaching—with opportunities to easily observe, evaluate, and assist instructors. And they are pioneering performance-based education funding models.

Many school reformers have sought these same changes in traditional public schools. Where successful, virtual schooling demonstrates that innovative reforms can be readily integrated into the public school system. As a result, it is increasingly important to understand both the innovations that are emerging from online schooling and their potential to leverage reform on a far larger scale in public education.

The Virtual School Landscape

Most people think of "cyber" charter schools, schools that are responsible for students' entire education

experience and that students attend full-time, as the primary sponsors of online learning. But in fact these cyberschools serve a small portion of the students learning online: As of January 2007, the Washington, D.C.-based Center for Education Reform, reported 173 virtual charter schools serving 92,235 students.⁷ And some of these schools have been controversial; critics worry about the socialization of full-time online students, the use of parents as teachers, and the transfer of student funding away from traditional schools. (See sidebar, page 9.)

But the majority of students learning online participate in “supplemental” virtual schooling programs sponsored by school districts, universities, consortia of schools or, as is many times the case, state departments of education. Because students can integrate courses from these programs into their traditional brick-and-mortar high schools, supplemental programs allow students to take online courses in addition to their regular school-based courses. Often, the virtual programs fill curriculum gaps, providing Advanced Placement and other courses that are not available, or courses that help students make up credits for missed or failed classes. And it is these supplemental virtual programs that have the most important lessons to teach public school reformers.

Supplemental virtual programs utilize a variety of online instruction models. Take, for instance, the 10-year-old nonprofit Virtual High School (VHS). As one of the oldest and most-recognized virtual schooling programs, VHS provides online courses for 457 traditional high schools in 28 states (and 23 countries).⁸ It is a membership-based supplemental program, where member schools contribute one of their classroom teachers to teach an online VHS class and provide a site coordinator to manage and oversee student participation at their school. In return, these schools’ students can take online classes through VHS (fees range between \$1,500 and \$6,500 depending on the number of students taking VHS classes). Classes average 20 students and are capped at 25. Each VHS teacher completes specialized online teacher training and is required to be both certified at the high school level and within their content specialty.

VHS’ courses are structured like a typical college course. Via the online course site, teachers post a syllabus, readings, assignments, and other course materials. Students are given time during the school day to dedicate to the online class, and the VHS-member school must ensure that its students have access to school computers. But students are not restricted to doing the work for their online class during the set-aside time, or while they are at school at all. They must, however, log into the course Web site at least once a day, and, as with all courses, they are expected to meet assignment due dates and other requirements mandated by the teacher, such as class participation, which in this case would involve participating in online discussions with teachers and classmates. In turn, VHS teachers, who can be located in

different parts of the country (or world) than their students, are expected to respond to questions and provide feedback on assignments within 24 hours.

VHS’ classes are highly interactive, with students communicating online with both teachers and other students. In contrast, other supplemental online programs involve

communication between students and teachers only and do not require students to interact with classmates. And some programs are primarily self-paced, where students progress through a course at their own pace and complete an assessment at the end of the course.

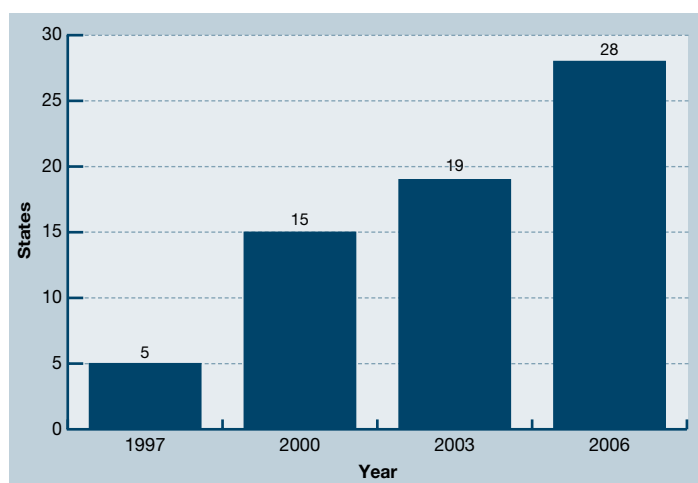
Today, one of the most popular models in online instruction is “blended learning,” which combines both online and face-to-face learning in the same course. In a recent survey conducted by the Sloan Consortium, an online learning association, 63 percent of school districts reported that they had one or more students enrolled in a fully online or blended learning course. The districts also predicted that over the next two years blended enrollments would increase by 23 percent and fully online enrollments by 19 percent.⁹

Personalized Learning

The motto at the state-run Florida Virtual School (FLVS), “any time, any place, any path, any pace,” emphasizes

Often, the virtual programs fill curriculum gaps, providing Advanced Placement and other courses that are not available, or courses that help students make up credits for missed or failed classes. And it is these supplemental virtual programs that have the most important lessons to teach public school reformers.

Figure 1. States With Virtual School Programs



Source: Responses to Education Sector phone and e-mail correspondence and John Watson and Jennifer Ryan, *Keeping Pace with K–12 Online Learning: A Review of State-Level Policy and Practice*, Evergreen Consulting Associates, 2006. According to the Evergreen Consulting Associates report, 24 states have recognized state-led programs that were created by legislation or by a state-level agency, and/or administered by a state education agency, and/or directly funded by a state appropriation or grant. Education Sector includes another four states that have schools that act as de facto statewide programs or are currently launching pilots to serve a significant number of students in that state.

the multiple levels of personalization possible in virtual schools. Students don't have to proceed at the same pace as an entire classroom—they can take extra time to review and receive additional guidance on lessons, or move through a course at an accelerated pace. Virtual schools can organize entire courses according to an individual student's learning needs. For example, students at FLVS don't have to fit a class into a fixed 18-week semester. They can choose a traditional, extended, or accelerated pace for a particular course. Here, the content remains constant, but the time required—be it 16 weeks, 18 weeks, or 22 weeks—adjusts. Moreover, FLVS students don't have to wait for the semester to begin—they can choose the month that they'd like to start their course.

This type of personalized learning benefits students at all levels. Many virtual school programs started with and have been defined by their Advanced Placement course offerings. But as John Bailey, senior program officer at the Bill & Melinda Gates Foundation and former director of the U.S. Office of Educational Technology, points out, virtual schools serve students “at both ends of the bell curve—not just AP students but also those needing

remediation.”¹⁰ For instance, over 23,000—almost half of the students—enrolled in Utah's Electronic High School (EHS) are taking courses to recover missed credits.¹¹

Performance Learning Centers, run by the nonprofit Communities in Schools (CIS), offer students at a high risk of dropping out a personalized program that combines the flexibility of online learning with the relationship-centered approach of a smaller, more individualized student environment. Students arrive at the center with different learning needs and at different levels. The online curriculum gives the program the capacity to meet students at their own level and accelerate their progress as needed. It also helps to free up teachers to work on an individual basis with students and coordinate project-based learning with both individual and groups of students.¹² There are 27 Performance Learning Centers in Georgia, one in North Carolina, and new sites are opening in Washington and Virginia. Each serves 75–150 students in partnership with a local school district. In Georgia, the State Board of Education waived student seat-time requirements, allowing for a self-paced learning approach where student attainment is based on the mastery of standards-based curriculum—regardless of the time required. “Performance-based [learning] is getting them ready for what life is like in the real world,” says Reggie Beaty, executive vice president and COO of CIS of Georgia.¹³

The emphasis on personalized learning extends beyond the classroom and the traditional student-teacher relationship. Virtual schools can erase the artificial boundary between academic learning that takes place during the school day and that which occurs at home or during after school hours. A student's course selection, activities, and progress can be easily accessible to parents, guardians, and mentors. At FLVS, approximately 60 percent of parents have requested and received access to a Web-based account to monitor their student's progress. Parents not only receive real-time access to students' grades and assignments, but also receive monthly phone calls and e-mail progress reports from teachers.¹⁴

A key to successful supplemental online programs is the support they give their students. Many programs incorporate an on-site mentor for online students, someone housed within the school building and able to meet face-to-face with students. University of California

College Prep, California's statewide virtual program, creates partnerships with local schools so that "school personnel are available to keep track of the online student's progress, proctor tests and exams, [and] advocate for the student."¹⁵ On-site personnel can be crucial to ensure that students are motivated to engage in coursework. Programs could also allow mentors and other community members to engage directly with a student's school work, providing the opportunity for additional out-of-school academic support and guidance.

The End of the Lone Teacher

The most successful virtual schools maintain the traditional importance of providing high-quality teaching and teachers. But they also incorporate new approaches to recruiting, observing, evaluating, and assisting instructors.

At Georgia Virtual School, run by the Georgia Department of Education, all teachers are considered adjunct or part-time teachers, with pay based on the number of courses and students that they teach.¹⁶ Twenty-one percent have doctoral degrees, and all are certified to teach in Georgia. Many of them would not be teaching if it wasn't for the virtual school option, says Kristie Clements, Georgia Virtual School program manager. "Sixty percent [of Georgia Virtual's teachers] were stay-at-home moms, dads, or retirees, many of whom don't usually come back into teaching," Clements says.¹⁷ Utah's Electronic High School also taps public school retirees to teach its courses. Administrator Richard Siddoway notes that the school will be actively "recruiting the retired as it expands its reach."¹⁸

Yet, finding high-quality teachers is just one aspect of providing high-quality learning. Clements sets clear expectations for her teachers at Georgia Virtual. All complete a six-week online teacher-training course, and many also participate in an online student teaching experience. As at Virtual High School, Georgia Virtual's teachers must respond to student e-mails within 24 hours. They have measurable goals for student achievement. And, most importantly, they must be prepared for a more transparent classroom experience.

"In online courses, the curriculum, the teacher's daily lesson plans, the interaction in the classroom are all on display, available for capture and replication" because they are online for all to see, explains the National Education Association's "Guide to Teaching Online Courses."¹⁹ As a result, they can be more easily observed, evaluated, and assisted. Says Clements: There is an "expectation that you can be observed, that we will evaluate you."²⁰

At Florida Virtual School, "instructional leaders" help evaluate and assist the school's over 308 full-time and 180 adjunct teachers, almost a quarter of whom hold advanced certification through the National Board for Professional Teaching Standards.²¹ The instructional leaders, who are required to have at least three years of teaching experience and a master's degree in educational leadership, supervise approximately 40 teachers each.²² In virtual schooling, where teachers could be anywhere in the world, that means that the instructional leaders are responsible for monitoring both teachers' communications with students and student progress. (Teachers are required to place and log monthly calls to students.)

Instructional leaders also conduct virtual class "walk-throughs" twice a month, during which they review student-teacher interactions and teacher responses to student work.

"In online courses, the curriculum, the teacher's daily lesson plans, the interaction in the classroom are all on display, available for capture and replication."

FLVS' custom-built student data system offers teachers instant information about their students' course progress, work submitted,

and contact logs. The system also provides administrators with a comprehensive view of the school's courses, student performance, and progress toward credits. Instructional leaders, teachers, and students/parents can access the portion of the data appropriate for their roles. All of the data, including class scheduling and waitlists, is available for instructional leaders to ensure a level of quality control that is too often lacking in traditional public high schools.

In addition to requiring teachers to call students each month, the school also employs staff persons to call students and parents to monitor school performance. For example, after noticing that one teacher had a disproportionate number of students withdrawing from classes, an instructional leader directed FLVS' staff to

telephone each student to determine the reason for the dropped courses.²³ Robert Blomeyer, senior researcher at the Midwestern Regional Educational Laboratory, notes that over time FLVS, which was launched in 1997, has improved its performance because of its development of accountability and student-teacher interaction measures, such as its phone contact and data systems.²⁴

Virtual learning, however, does not change the need to give teachers manageable workloads and to support teachers. Barbara Stein, coordinator of the NEA guide, notes that online teaching can be “much more one-to-one intensive” for both teachers and students.²⁵ Studies of online teaching in higher education confirm that while the online classroom shifts the timing and frequency of teaching activities, the overall workload for instructors is approximately the same or even more than in a traditional class.²⁶

An Entrepreneurial Climate

Catering learning to meet a student’s personal needs and instituting new approaches to evaluating and assisting teachers are essential components of successful virtual schooling models. But, the way some virtual schools are financed also contributes to the success of these programs.

At Florida Virtual School the combination of entrepreneurship and technology has led to an innovative approach to school funding. After five years of funding FLVS through an annual appropriation using the state’s traditional enrollment-based funding method, the Florida legislature in 2003 moved the virtual school system to a performance-based funding model, where funding is based on students’ successful completion of their courses—a step that places far more pressure on Florida Virtual to ensure its students’ success than exists in traditional public school systems.

Florida funds six credits per high school student per year. So each time a student successfully completes a one credit course, FLVS receives \$1,054—one-sixth of FLVS’ per-pupil funding.²⁷

FLVS’ performance-based funding model is reinforced by the state’s school choice provisions. According to state rules, a student’s full-time school may not deny access to courses offered by FLVS (assuming that the desired

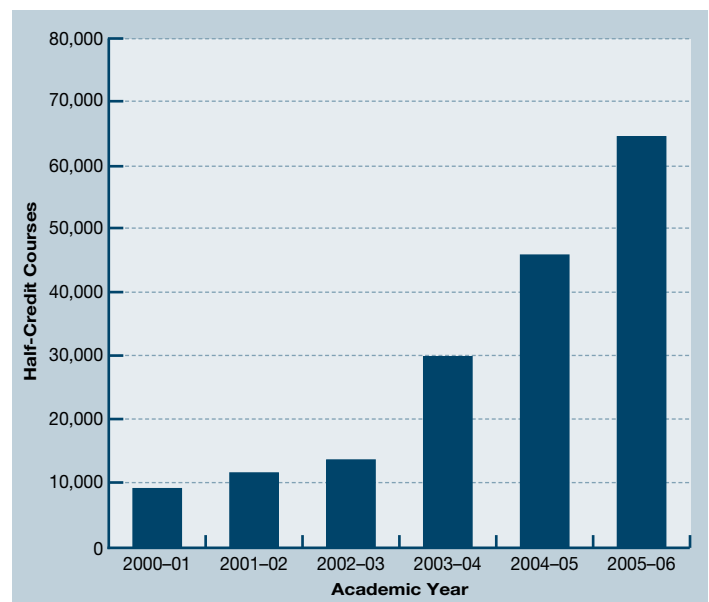
online course(s) is an appropriate course placement based on the student’s academic history, grade level, and age).²⁸ Therefore, students are not limited in their option to choose FLVS’ courses.

Taken together, the performance-based funding model and school choice provisions create an entrepreneurial climate that is unique among publicly run schools. Since there are no barriers to enrollment and funding is not capped at a pre-set amount, FLVS can increase its revenue by enrolling additional students and ensuring that those students successfully complete courses. And since each of these students can enroll in multiple courses (the average FLVS high school student enrolls in 2.1 courses), one of FLVS’ greatest sources of course enrollment growth is its current student base.

The result has been sharp growth in FLVS enrollments. Five years ago, FLVS taught fewer than 10,000 students. By the 2005–06 school year over 31,000 students enrolled in at least one course, and the total number of courses completed by students at FLVS has grown seven-fold over the past six years (see Figure 2).²⁹

Because of its course-completion funding structure, FLVS has an incentive to continue to grow. But it can only do so if it offers programs that students like and it

Figure 2. Florida Virtual School Course Completions



Source: Florida Virtual School: Florida reports the number of half-credit, semester-equivalent courses completed.

ensures that its students complete courses successfully—incentives that school reformers are eager to introduce to traditional public schools. FLVS is now “an online-courseware entrepreneur,” writes Christina Wood in *Edutopia* magazine. It is “selling its curriculum to schools in Florida and beyond and offering franchises (a soup-to-nuts offering of everything from hardware and software to curriculum to teacher training) to school districts within the Sunshine State,” generating added revenue to aid in further course development.³⁰

Other virtual schools have been no less entrepreneurial. Virtual High School’s collaborative model, where traditional schools purchase online class seats for their students and contribute one teacher to the pool of online teachers, has enabled VHS to increase its membership and expand its capacity—through new teachers—at the same time. Like FLVS, VHS’ model allows it to grow and respond to student demand for new classes and course offerings.

Utah’s Electronic High School, which serves almost one-third of all Utah high-school-age students, has aspirations to market its courses nationally and internationally. But the state Board of Education is also considering a proposal to create a second private version of the school—the “American Academy.” The Academy would be run by local business entrepreneurs and offer adult and foreign students an alternative to the General Education Diploma (GED).³¹

Cost Concerns and Benefits

While supplemental virtual schools are able to pursue innovative funding models, they still face traditional cost concerns. One of the few published cost studies on virtual schooling, commissioned by the BellSouth Foundation, found that “the costs of operating a virtual school are about the same as those of a regular brick-and-mortar school.”³²

Virtual schools escape the geographic constraints and building costs of traditional schools, but quality teachers remain essential for personalized instruction and compensation is still the largest expense line item. In fact, while a traditional school typically spends 70 percent to 80 percent of its budget on personnel, a virtual school’s expenditures in these areas may be even higher, given the costs of not only teachers but also online course development, support, and technology personnel.

Instead of physical plant and transportation costs, virtual schools must pay for learning-management software and other technology costs, mobile phones or long-distance for teachers to contact students and parents, and technical training.³³ Many of these extra costs support efforts to ensure that students can easily access the online course technology and to provide personal contact with instructors.

Start-up costs can be significant, but, as opposed to physical schools, one virtual school can serve tens of thousands of students. Over time, there is the potential for significant cost efficiencies in some of these areas. States can copy and re-use course materials and per student hardware and software costs tend to decline with scale.³⁴ But, while many new students can be added to a school’s technology platform without additional purchases, instructional costs do not scale with the same savings. New students require new teachers. Since many virtual schools are still relatively new, the true costs of high quality virtual schooling and potential economies of scale are not yet clear.

Challenges Remain

Despite virtual schooling’s dramatic growth, popularity, and possibility for innovation, supplemental online learning faces many challenges as it spreads across the nation.

There are wide variances in the quality of K–12 virtual programs. While Florida Virtual, Virtual High School, and other virtual schools utilize the unique qualities of online learning to offer more rigor, personalization, and flexibility, other programs fulfill critics’ fears, providing poorly designed and unchallenging lessons, little personal attention, and scant information with which to gauge the quality of their programs. But research does not yet tell us which types of programs, circumstances, and supports are needed for success.

Even basic statistics on student performance and course enrollments in virtual schools are difficult to obtain. The federal No Child Left Behind Act and many state accountability systems that rate schools can’t measure the performance of many virtual schools. Supplemental online schools serve mostly high school students who typically take only a few online courses. As a result, measuring

the results of online learning against traditional public school instruction requires students to take standardized statewide end-of-course exams, and most states don't administer such tests under NCLB or their state testing systems. The Advanced Placement program offers such tests, as do a few states for some courses. But such tests are not widespread enough to offer a clear picture of virtual school performance.

Access to rigorous courses and highly qualified teachers for all students—no matter where they live—is one of the promises of virtual education. To overcome persistent gaps in achievement among groups of students, many states chartered their virtual schools with an explicit mandate to reach underserved students. Many programs, however, serve only the most motivated and talented—a problem exacerbated by the fact that the availability, speed, and quality of schools' connections to the Internet vary widely. But, without efforts to ensure equal access among all students, virtual learning's potential to serve students at all learning levels—especially those who are unsuccessful in traditional schools—will be lost.

Reform at Scale?

With several very successful, large-scale model programs boasting up to a decade of experience educating tens of thousands of students, virtual schooling has moved beyond the pilot stage. “We are no longer talking about potential—this is reality,” says Bill Thomas, director of educational technology for the Southern Regional Education Board, an education policy consortium sponsored by Southern states.³⁵

But, can that innovation spread? And, if it does, can the practices found in supplemental virtual schools cause educators and policymakers to question and change key components of our traditional public system?

Perhaps.

Virtual schooling's Internet-based model removes school construction and geographic constraints on growth, allowing the schools to replicate quickly, a key to large-

scale reform. Florida Virtual School, for instance, already has more students than well-known charter programs such as Green Dot Public Schools, the Knowledge

Is Power Program (KIPP), and Aspire Public Schools combined.³⁶ Virtual High School's CEO Liz Pape explains that for her program, “scale was built-in from the start.” VHS' growth is based on satisfying and recruiting new member schools—rather than through a yearly legislative formula or

allocation. She credits the organization's market-based strategy, noting advantages over more static funding models: “[Other] programs can only serve as many students as their budgets afford, especially during the start-up years.”³⁷

Secondly, both statewide political leaders and local educators support supplemental virtual schools. Republican and Democratic governors alike have backed the creation of statewide virtual schools. Because these supplemental programs operate inside the “public” system—with fully-certified teachers, union members, and support from public school students and families—they do not foster the ideological and political resistance that the controversial cyberschools do.

And, even though a number of state teacher unions have brought suit against independent charter cyberschools, unions do not oppose all virtual schools. In fact, the NEA, the nation's largest teachers union, has recognized the potential for the virtual teaching environment to improve the entire profession, explaining that “online teaching can extend the boundaries of the profession, making it more flexible, more creative, and in a word, more professional.”³⁸ The NEA has produced two booklets discussing the virtues of online education and, in 2002, adopted a policy statement that aligns with virtual school leaders on a key issue—the ability for qualified teachers to teach across state lines.³⁹ Currently, in some states, teacher licensing policies prohibit teachers living in and certified in one state to teach for a virtual school located in another state.

As opposed to charter schools—which today mostly function in parallel with traditional schools—supplemental virtual schooling experiences are by their nature integrated

and more likely to influence the traditional system. Some teachers already report that teaching in the online environment significantly influences their classroom-based teaching. Seventy-four percent of respondents to an independent study of Virtual High School's teachers said that becoming an online teacher changed the way they taught, and 75 percent responded that teaching online had a positive impact on their face-to-face teaching. According to the study, "teachers generally reported that after teaching online, their practice supported increased student participation...greater emphasis on independent learning, [and] more effective use of questioning strategies...." Teachers participating in the survey also believed that an "increase in individualization from online

communications can support broader improvements in teaching and learning practice...."⁴⁰

There are certainly many challenges to overcome in integrating online learning into traditional public schools, including a prevailing disconnect between the traditional and online learning environments, uncertainty around learning outcomes, and the behemoth of equity and access. But online learning's ability to bring about long-sought-after reforms in teaching, learning, accountability for performance, and other key aspects of public education, makes the work of the most successful pioneers in virtual schooling important to educators and policymakers alike.

The Cyberschool Controversy

Cyberschools are publicly funded, fully online schools that students “attend” on a full-time basis. The schools can award high school diplomas and other academic credentials (as opposed to supplemental virtual schools, where students take online courses in addition to their regular school-based courses). Cyberschool students learn primarily from home and at a personalized pace, usually with some guidance from parents. Many of the schools are controversial—and growing rapidly.

Typical cyberschools provide students with computers, textbooks, Internet access, pre-packaged lesson plans, and teachers that communicate through phone calls, e-mail, and Web conferencing. Students and families choose cyberschools for a number of reasons, including the opportunity for greater customization and parental involvement; safety concerns; unhappiness with traditional public schools; physical or other limitations on school attendance such as athletic or artistic pursuits; and special learning needs.

Cyberschool enrollments are increasing rapidly, tripling from 31,000 students in the 2004–05 school year to over 92,000 as of January 2007.⁴⁷ Already in 2007 new cyber charter schools have been approved in Kansas and Nevada, and are currently being considered by a Wisconsin school board and the South Carolina legislature. Additionally, two major education corporations, Kaplan and the Apollo Group, have just decided to invest in online charter education by purchasing companies that run and develop curriculum for cyber charter schools.⁴⁸

Despite their growth and popularity, these schools are highly controversial—a result of their non-traditional approach to learning, their status as charter schools, and their enrollment of former home-school students. Policies vary from state to state, but in general oversight and regulation have not been able to keep pace with the rapid increase in cyberschool options.

The issues at the center of the cyberschool controversy include:

Funding

While sixteen state-run online schools offer a full-time, cyberschool option, most cyberschools are organized as charter schools, publicly funded but privately operated.⁴⁹ They can be authorized at the state level, district level, or by an independent group such as a consortium or a chartering authority. Almost all cyberschools receive full-time equivalent (FTE) funding on a district per-pupil basis, although usually at a lower level than their traditional counterparts. Money follows the student from his or her assigned district to a chosen cyberschool, although most states have some provision for partially reimbursing the sending district.

Many charter cyberschools contract with for-profit operators called education management organizations (EMOs). These companies, such as Connections Academy and K12 Inc., provide the materials, instruction, administrative services, and lesson plans that students need. Though students follow a

curriculum created by a private provider, cyberschools must teach to state and federal standards, and students are required to take all mandated standardized tests.

Cyber charter schools are especially controversial when students enroll in cyberschools outside of their assigned district, drawing funds from state aid to traditional schools and across district lines. For instance, the tiny Vilas School District in rural Southeastern Colorado serves just 100 traditional students. Yet, in 2005–06 its cyber program enrolled 1,777 students, up from 316 just a year before. In the same year, state funding to Vilas jumped from \$2.5 million to \$10.9.⁵⁰ Vilas’ charter school, the Hope Online Learning Academy Co-Op, along with other Colorado cyberschools, were the subject of a recent performance audit of K-12 education in the state. Among its findings, the audit reported that at least five schools did not comply with state mandates to employ licensed teachers, a lack of student documentation, and a lack of oversight for student safety and security.⁵¹ A bill to regulate cyberschools is now making its way through the Colorado legislature.⁵²

Critics also cite additional concerns about lax accountability among cyberschools, citing reports of low assessment participation rates and low test scores.⁵³ They argue that underperforming cyber charter schools should be shut down.

Socialization

For many parents and educators, cyberschools evoke scenes from the “Matrix” science fiction trilogy—children plugged into computers all day, lacking in social skills, and devoid of physical contact. They fear that secluded cyberschool students fail to develop social skills and real world survival abilities, missing out on important aspects of a traditional education such as peer interaction and collaboration. Supporters of cyberschools point to increased personal attention from teachers, customization of learning, and the opportunity for socialization in various non-academic and community activities.

Home Schooling

Many cyberschool students were formerly home-schooled, although the exact number is debated.⁵⁴ Home-school opponents, including many teacher unions, charge that cyber charter schools use public funds for home-based schools. In Wisconsin and Illinois, state teacher unions have brought suit, alleging that cyberschools use parents as educators instead of state-certified teachers.⁵⁵ Ironically, some home-school supporters criticize cyberschools in the other direction, objecting to the fact that the schools must teach to state standards and adhere to other state mandates. A recent editorial from the Home School Legal Defense Association urges members not to participate in Missouri’s new program: “The government’s virtual school program offers you a choice: free stuff—or a free way of life. We urge you to choose a free way of life.”⁵⁶

Policy Recommendations

1. Ensure Both Quality and Innovation

Foster Transparency

Educators, interest groups, and policymakers have called for stricter scrutiny of virtual schooling. This scrutiny is needed, but it shouldn't compromise the innovative aspects of virtual schooling. The right way to increase scrutiny is to demand greater transparency and more accurate ways to measure student learning in virtual schools. Regulating the wrong inputs—class sizes, seat time, or any other number of traditional measures—will not guarantee quality, and may stifle the innovation and flexibility that gives virtual learning its strength.

The charter schooling community's experience over the past decade shows that unless the public can differentiate the differences between strong and weak programs, all virtual schools will be publicly tainted by the worst examples in their midst. Many virtual school programs are new and reluctant to publicize data about their programs until they have a chance to establish themselves. But, virtual schools' level of public prominence and growth makes the lack of transparency not only unwise, but likely not possible.

Virtual schools, therefore, must develop rigorous and universally accepted ways to measure learning—at the course, grade, and/or specific standards level. They must also dramatically improve assessment to include measures for more advanced skills such as critical thinking and problem-solving.

Virtual schools should:

- Participate in consortia to standardize, make public and provide timely reporting around student demographics and course enrollments, learning outcomes, test results, and other critical data. A nascent University of Florida project to develop standardized methods and tools for evaluating the effectiveness of online education by synthesizing data across southern states' programs is a promising example.
- Research, develop, and implement new measures to assess student engagement and demonstrate skills such as critical thinking and collaborative work.

- Encourage (and make it simple for) parents to access students' course requirements, progress reports, and test results online.

Policymakers should:

- Make it their primary goal to use virtual schooling to significantly improve student learning outcomes and not as a measure to save costs. Pursuing virtual schooling solely as a means for cost savings will likely lead to lower quality programs.
- Ensure that states' and districts' traditional student information systems can easily integrate with virtual programs' data systems and report on students' progress in a coherent manner.
- Provide incentives for virtual schools to publish timely, accessible, and relevant data about their programs.
- Fund research to develop reliable indicators and demonstrations of more advanced learning skills.
- Ensure that schools funded on a performance-based system, like Florida Virtual School, have a strong, transparent accountability system to ensure the proper alignment of incentives. Such systems will help policymakers who are overseeing programs with funding contingent on performance (i.e., where funding is based on student performance) mitigate against potential financial pressures to lower academic standards.

Accelerate Innovation

The value of virtual schools as laboratories of reform lies beyond merely transferring current classroom practices to the Internet. In the words of Marshall Smith, director of the William and Flora Hewlett Foundation's education program and a member of Education Sector's board of directors: "Don't optimize based on the current paradigm."⁴¹

A broad range of new and emerging technologies—from immersive simulations to cognitive tutors—are being developed to engage learners and improve teaching. The "Learning Science and Technology R&D Roadmap," a 2003 report from The Learning Federation, a project of the nonprofit Federation of American Scientists, notes: "For the first time in history, technology exists that can make vastly improved learning systems routinely available. But this goal can only be achieved if we are willing to undertake a long-term, large-scale effort to develop, test, and disseminate tools for building advanced learning systems."⁴²

But district- and state-run programs are not by themselves able to pay the cost of expensive research and development of new teaching methods and course materials.

Policymakers should:

Create a Federal Virtual Schooling Innovation Fund:

The federal government should create a \$120 million Virtual Schooling Innovation Fund to spur innovations at the high school level that could be extended to hundreds of thousands of students easily and rapidly.

The fund would not focus on basic research or current course development, but instead on the development and application of entirely new technologies to improve the online learning experience, teaching and assessment methods, and course materials.

The fund would be administered by the U.S. Department of Education's Office of Innovation and Improvement. Grants would go to district- and state-run virtual schools, nonprofit and for-profit organizations, and academics working with these institutions. Each grantee would have to develop a plan to pilot test, evaluate, and replicate a project in one or more virtual school program within two years. Over time, grantees with the strongest records of having their innovations adopted by others would get preference for additional funding. All materials, methods, technologies, and data developed through the fund would be available for adoption via a public and freely available open source model.

Reduce Fragmentation and Capitalize on Economies

of Scale: Virtual schooling curriculum, along with interactive lessons, simulations, and multimedia can be expensive to develop. Thus, district, state, nonprofit, and university-based programs should take advantage of economies of scale and remove barriers to cross-state or joint development and updating of course components. The federal innovation fund proposed above could be used to provide incentives for joint funding of new courses and innovative practices.

In addition, districts and states should remove categorical barriers and restrictions on the use of funds in traditional classrooms that could be better used for virtual schooling. For instance, money dedicated solely to purchase hard-copy textbooks might be better allocated toward the development of virtual classes.

2. Create Dynamic Models for Funding and Accountability

The traditional, seat-time based school schedule is reinforced by current student funding models. The dominant model, which is based on average daily attendance, is not flexible enough to enable the exponential number of variations—including accelerated or expanded time for learning activities—required to implement true personalized learning. As students mix both online and offline learning, they might take courses or components of courses from a variety of providers. New student funding models, no longer based on rigid attendance counts, must evolve to support this integrated set of blended and fully online course and school providers. Otherwise, virtual schools will struggle, as individual schools' ability to personalize is constrained by a funding stream that cannot support an array of multiple providers. Without mechanisms that enable funds to easily flow across district, state, and national lines at more discrete levels, the field as a whole will be stunted by a lack of scale and market-based incentives.

In addition, many states' funding provisions artificially cap the number of students that can enroll in a state-led program. Bill Thomas of SREB notes that "in a number of states, demand is much higher than funding can allow."⁴³

One solution is the development of weighted student funding models to account for various differentials in time and effort. Individual schools would no longer control a student's mix of classes and services, and funding would not merely follow students to their schools. Instead, funding would be allocated by course or, if a course contains both online and offline components, to each provider according to its role (for instance, an online virtual school that also employs school-based mentors).

Likewise, accountability for student outcomes would follow funding streams at this more discrete level. Florida's model, which allows students to take their funding for one or several courses to the virtual school, is a good example of this evolution. Other states will likely follow Florida's lead. Rick Melmer, South Dakota's State Education Secretary, has already suggested that the state's new virtual high school could lead his state to fund schools on a credit-by-credit basis. He "wouldn't be surprised if funding in South Dakota boils down to being by credits."⁴⁴

A different funding model would give much more spending responsibility to individual schools or small consortia of schools. Schools would be accountable for students' overall performance and have discretionary control over the vast majority of funds. These schools would then be enabled to "purchase" the appropriate mix of classroom-based and virtual-based instruction. This model would likely lead to much more blended learning, as successful schools provide a mix of online and offline offerings based on student needs and available teaching expertise. Member-schools of Virtual High School's collaborative are an example of this model, as they "purchase" seats in VHS' online courses by allocating a classroom-based teacher's time to VHS.

3. Enable True Reciprocity for Certified Teachers

While virtual schools can eliminate geographic barriers to employing highly qualified teachers, licensing issues across state lines continue to limit virtual schools' ability to recruit and teachers' options to teach. In some states, teacher licensing policies restrict teachers to providing online instruction to students in states where the teachers are licensed and certified to teach, regardless of the teachers' academic qualifications or experience. Other states may claim to offer reciprocity, but in reality, excessive fees, additional testing requirements, or the time required to process applications create barriers. These subtle barriers are even more acute for virtual schools, which educate students across state borders and which need to be nimble in responding to shifting student demand for courses.

In response, states should allow teachers living in and certified in one state (for example, Michigan) to teach for a virtual school located in another state (for example, Utah) without having to get certified to teach in the virtual school's home state (in this example, Utah).

The National Education Association, the nation's largest teachers union, supports this reciprocity for online teachers. In its 2006 "Guide to Teaching Online Courses," it writes: "Those instructing online should be licensed in a subject area, but if they are teaching across state lines, failure to be certified in a specific state should not block their authority to teach online in that state."⁴⁵

4. Integrate With Other Reform Efforts

Virtual schools' strengths are particularly well aligned with one of the country's most prominent reform efforts: high school reform. A recent analysis of K–12 distance education research published by Learning Point Associates, a nonprofit educational research organization, underscored the opportunity for virtual schooling to accelerate high school reform: "Virtual schools may represent the best hope for bringing high school reform quickly to large numbers of students."⁴⁶

For example, many states are attempting to raise graduation standards and increase the level of rigor in their schools' curriculum, but are not yet considering how virtual schools could further these efforts. Statewide virtual schooling programs can ensure access to consistent high quality teaching and course content across an entire state's regions.

Educators, advocates, and policymakers pursuing other reform efforts, especially at the high school level, should consider how virtual schooling can be used to supplement or enhance those efforts. For example:

- Reformers looking to add rigor to high school curriculums, especially in advanced science, technology, engineering, and mathematics (STEM) subjects, can use virtual schooling options to ensure access to courses for rural and otherwise underserved schools.
- Small schools can use virtual schooling options to maintain the broad menu of course subjects offered by large, comprehensive high schools.
- Educators focused on improving students' transition to college can use virtual learning to help students experience the more self-directed, collaborative form of learning most likely found at the post-secondary level.
- To prevent drop-outs, schools can use virtual classes to offer rapid remediation and credit recovery—before the year ends and a student fails a course.

Appendix. State Virtual School Student Enrollment 2005–06

School	Enrollment	School	Enrollment
Utah: The Electronic High School	49,391	Illinois Virtual High School	1,964
Florida Virtual School	31,011	West Virginia Virtual School	1,385
Virtual High School (Massachusetts)	7,724	Colorado Online Learning	1,150
Nevada: Clark County School District Virtual High School	7,116	Wisconsin Virtual School*	1,200
Michigan Virtual High School	7,073	Arkansas Virtual High School	1,200
North Dakota Division of Independent Study	5,662	Mississippi Online Learning Institute (now Mississippi Virtual Public School)	1,082
Kentucky Virtual High School	4,092	Hawaii E-School*	700
North Carolina Virtual Public School	3,627	Iowa Learning Online	519
Louisiana Virtual School	2,800	Alabama Online High School (now called Alabama ACCESS)	406
Idaho Digital Learning Academy	2,636	Maryland Virtual Learning Opportunities Program	332
University of California College Prep Online	2,283	Missouri Virtual Public School	N/A
Georgia Virtual School	2,143	Tennessee (E4TN)	N/A
University of Oklahoma, Independent Learning High School	2,126	South Dakota Virtual High School	N/A
Virginia Virtual AP School*	2,000	South Carolina Virtual School	N/A
		Total	139,622

Note: * = approximation; N/A = not yet operational or data not available.

Source: All figures are based on phone or e-mail responses from statewide virtual schools in summer/fall 2006. Education Sector researchers also consulted two reports, John Watson and Jennifer Ryan, *Keeping Pace with K–12 Online Learning: A Review of State-Level Policy and Practice*, Evergreen Consulting Associates, 2006 and *Report on State Virtual Schools*, Southern Regional Education Board, August 2006, for definitions and additional cross-checking of enrollment numbers.

Endnotes

- ¹ The Sloan Consortium's March 2007 Survey of U.S. school district administrators is the most recent research into the prevalence and use of virtual schooling. Based on a national survey of American school district chief administrators during the 2005–06 academic year, Sloan estimates that 700,000 students engaged in online courses that school year. The report also notes "data indicate that online learning in K–12 schools has increased more than tenfold in six years." See Anthony G. Picciano and Jeff Seaman, *K–12 Online Learning: A Survey of U.S. School District Administrators* (Needham, Mass: The Sloan Consortium, March 2007).
- ² The National Center for Education Statistics estimated that during the 2002–03 school year, 328,000 public school students were enrolled in some type of distance education course—including Internet-based and other types of distance education programs. See the National Center for Education Statistics, *Distance Education Courses for Public Elementary and Secondary School Students: 2002–03*, available online at http://nces.ed.gov/surveys/frss/inc/displaytables_inc.asp
- ³ State programs that have launched or will launch in 2007:

After over 8,000 students used the virtual school for AP exam review, North Carolina Virtual Public School officially opened up registration for 2007 summer and fall classes on March 30, 2007. (Rob Purdy, "Virtual School Realities," *Leadership Magazine*, Summer/Fall 2006; and March 30, 2007 press release, Beverly Eaves Perdue, North Carolina Lieutenant Governor.)

Following up on the pilot established in 2006, two different proposals for a state-run virtual school have passed in the South Carolina state legislature, and the details are currently being finalized. The school would serve 9,000 students in the 2007–08 school year. (Jessica Foster, "South Carolina Considers Web School," *The Sun News*, April 24, 2007.)

Missouri's Virtual Instruction Program will begin operation in the fall of 2007. (Cory de Vera, "Students Set Their Own Pace in Online Classes," *Springfield News-Leader*, March 4, 2007.)

The South Dakota Virtual High School began accepting its first registrations in March 2007. (Jon Walker, "Virtual High School Classes Open," *Argus Leader*, March 17, 2007.)
- ⁴ I. Elaine Allen and Jeff Seaman, *Making the Grade: Online Education in the United States, 2006* (Needham, Mass.: The Sloan Consortium, November 2006).
- ⁵ Anthony G. Picciano and Jeff Seaman, *K–12 Online Learning: A Survey of U.S. School District Administrators*.

Chief among the K–12 literature is an analysis of 14 Web-delivered programs that found no statistically significant difference in student achievement when compared to traditional instruction. See Cathy Cavanaugh, Kathy Jo Gillan, Jeff Kromrey, Melinda Hess, and Robert Blomeyer, *The Effects of Distance Education on K–12 Student Outcomes: A Meta-Analysis* (Washington, D.C.: Learning Point Associates, 2004). A more recent study confirms this outcome but also suggests that student performance will improve over time as both virtual school training and research methodology become more precise and descriptive. See Rosina Smith, Tom Clark, Robert Blomeyer, *A Synthesis of New Research on K–12 Online Learning* (Washington, D.C.: Learning Point Associates, 2005). As virtual learning grows, more tools for evaluating outcomes are under development. For example, the AT&T Foundation recently funded a University of Florida project to develop standardized methods and tools for evaluating the effectiveness of online education. At present, though, there are still relatively few methodologically rigorous research projects examining the effectiveness of K–12 virtual schooling.
- ⁶ The Starbucks in the South Beach section of Miami, where customers can share music selections at listening stations and burn CDs from among several hundred thousand choices, is an example of a retailer integrating the digital and the physical and taking advantage of the social experience that only physical stores can provide.
- ⁷ Center for Education Reform, personal communication, January 2007.
- ⁸ Virtual High School Web site, February 14, 2007, available online at <http://www.govhs.org/Pages/AboutUs-Home>
- ⁹ Anthony G. Picciano and Jeff Seaman, *K–12 Online Learning: A Survey of U.S. School District Administrators*.
- ¹⁰ John Bailey, personal communication, October 19, 2006. The Bill & Melinda Gates Foundation is an Education Sector funder.
- ¹¹ Utah Electronic High School, based on 2006 enrollment figures.
- ¹² Reggie Beaty, personal communication, February 20, 2007.
- ¹³ Ibid.
- ¹⁴ Lori Gully, Director, Florida Services, Florida Virtual School, personal communication, November 17, 2006.
- ¹⁵ University of California College Prep Online, Web site, February 16, 2007, available online at http://www.uccp.org/index.php?option=com_content&task=view&id=174&Itemid=258.
- ¹⁶ Kristie Clements, "Meeting Highly Qualified Teachers and NCLB Provision Using Online Learning," (paper presented at the North American Council for Online Learning Symposium, Plano, TX, November 6, 2006).
- ¹⁷ Ibid.
- ¹⁸ Jennifer Toomer-Cook, "Schools Rehiring Retirees," *The Deseret Morning News*, January 13, 2007.
- ¹⁹ National Education Association, *Guide to Teaching Online Courses* (Washington, D.C., 2006), available online at http://www.nea.org/technology/images/online_teachguide.pdf.
- ²⁰ Kristie Clements, "Meeting Highly Qualified Teachers and NCLB Provision Using Online Learning."
- ²¹ Florida Virtual School, Web site, February 13, 2007, available online at http://www.flvs.net/educators/fact_sheet.php
- ²² Florida Virtual School, Web site, April 20, 2007, available online at http://www.flvs.net/general/job_descriptions.php
- ²³ Lori Gully, personal communication and data system demonstration, November 17, 2006.
- ²⁴ Richard Blomeyer, "Research on Virtual Schools: Knowledge-Building on What We Know and What We Need to Know," (paper presented at the North American Council for Online Learning Symposium, Plano, TX, November 5, 2006).

- ²⁵ Barbara Stein, External Partnerships and Advocacy, National Education Association, personal communication, December 6, 2006.
- ²⁶ Joseph Cavanaugh, "Teaching Online—A Time Comparison," *Online Journal of Distance Learning Administration*, 8, no. 1 (Spring 2005). The study finds that the additional time required by instructors in the online format is the result largely from increased student contact and individualized instruction and not from the use of technology per se.
- ²⁷ Florida Department of Education, personal communication, May 2, 2007. The Florida Education Finance Program currently provides FLVS with approximately \$6,328 per full-time enrollment. See the Florida Education Finance Program, 2006–07, Fourth Calculation, Office of Funding and Financial Reporting, April 17, 2007, available online at <http://www.fldoe.org/fefp/offrfefp.asp>.
- ²⁸ Florida K-20 Education Code (s.1002.20), available online at http://www.flvs.net/educators/DOE_policy_FLVS.php#policy
- ²⁹ Preliminary results from Florida TaxWatch study of Florida Virtual School, personal communication, April 18, 2007.
- ³⁰ Christina Wood, "Highschool.com," *Edutopia*, April, 2005
- ³¹ Nicole Strickler, "Online High School Could Go Global," *The Salt Lake Tribune*, November 4, 2006.
- ³² Augenblick, Palaich, & Associates, *Costs and Funding of Virtual Schools*, October 2006.
- ³³ Southern Regional Education Board, *Cost Guidelines for State Virtual Schools*, August 2006.
- ³⁴ Ibid.
- ³⁵ Bill Thomas, personal communication, October 11, 2006.
- ³⁶ Enrollments for KIPP (over 12,000 students) and Green Dot Public Schools (2,022 students) are from self-reported figures found on the schools' Web sites as of April 23, 2007. Figures for Aspire Public Schools (4,600 students) reported by the NewSchools Venture Fund.
- ³⁷ Liz Pape, personal communication, December 15, 2006.
- ³⁸ National Education Association, *Guide to Teaching Online Courses* (Washington, D.C., 2006), available online at <http://www.nea.org/technology/images/onlineeachguide.pdf>.
- ³⁹ See National Education Association's policy statement on "Distance Education" adopted by the 2002 Representative Assembly, along with *Guide to Teaching Online Courses* and *Guide to Online High School Courses*.
- ⁴⁰ Susan Lowes, Institute for Learning Technologies, Teachers College, Columbia University, "Online Teaching and Classroom Change: The Impact of Virtual High School on Its Teachers and Their Schools." Excerpted in *A Synthesis of New Research on K–12 Online Learning* (Washington, D.C.: Learning Point Associates, November 2005).
- ⁴¹ Marshall Smith, personal communication, October 17, 2006. Smith is a member of Education Sector's board of directors, and the William and Flora Hewlett Foundation is an Education Sector funder.
- ⁴² The Learning Federation, *Learning Science and Technology R&D Roadmap*, September 2003.
- ⁴³ Bill Thomas, personal communication, October 11, 2006.
- ⁴⁴ "Enrollment in Online Classes Expected to Increase," *The Rapid City Journal*, April 10, 2007.
- ⁴⁵ National Education Association, *Guide to Teaching Online Courses*.
- ⁴⁶ Learning Point Associates, *The Effects of Distance Education on K–12 Student Outcomes: A Meta-Analysis*, October 2004.
- ⁴⁷ Center for Education Reform, personal communication, January/March 2007.
- ⁴⁸ Alison Damast, "Be True to Your Cyberschool," *Business Week*, April 19, 2007, available online at http://www.businessweek.com/bschools/content/apr2007/bs20070419_375162.htm.
- ⁴⁹ The state-run cyberprograms make up a very small percentage of the country's cyberschools and enroll comparatively few students. For example, only 3 percent of students at Utah Electronic High School, the nation's largest state-run school, are enrolled full-time.
- ⁵⁰ Berny Morson, "Online Classrooms, Costs Raise Concerns; Critics: Programs Untested, Siphons Money from Schools," *Rocky Mountain News*, March 6, 2006.
- ⁵¹ Report of the Colorado State Auditor, Online Education Performance Audit, November 2006.
- ⁵² Berny Morson, "Senate OKs Bill to Regulate Online Schools," *Rocky Mountain News*, May 4, 2007.
- ⁵³ A 2005 NCRL report states that students "perform equally well or better academically in online learning," and many cyberschools maintain assessment participation rates of over 95 percent. However, evidence from Colorado shows online students lagging significantly behind their district school peers academically, according to the March 2007 article "Virtual Reality Check," and assessment participation rates of only 63 percent to 84 percent, according to the October 2006 report "Keeping Pace with K–12 Online Learning." Karen Rutzick, "Virtual Reality Check," *Teacher Magazine*, March 1, 2007; John Watson and Jennifer Ryan, "Keeping Pace with K–12 Online Learning," (Evergreen, Colo.: Evergreen Consulting Associates, October 2006); Rosina Smith, Tom Clark, and Robert Blomeyer, "A Synthesis of New Research on K–12 Online Learning," (Naperville, Ill.: North Central Regional Educational Laboratory, November 2005).
- ⁵⁴ Several studies find that a majority of cyberschool students were previously home-schooled, but a fact-checking report created by Connections Academy asserts that these claims are not substantiated, and in reality cyberschools are predominately composed of former public school students. James Bodgen, *Cyber Charter Schools: A New Breed in the Education Corral*, (National Association of State Boards of Education, 2003); Glenn Cook, *The Cyber Charter Challenge*, (American School Board Journal, 2002); Luis A. Huerta and Maria Fernanda Gonzalez, *Cyber and Home School Charter Schools: How States Are Defining New Forms of Public Schooling* (National Center for the Study of Privatization in Education, 2004).
- ⁵⁵ Stan Johnson, "Virtual Schools Require Real Teachers," *Wisconsin State Journal*, May 15, 2005; Dan Benson, "Offering a Virtual Education: Northern Ozaukee District Plans to Make

Online High School Available Statewide," *Milwaukee Journal Sentinel*, December 24, 2006; Stephanie Banchemo, "Teacher Union Sues Over Cyber School," *Chicago Tribune*, October 5, 2006; "Virtual Schools Offer Diploma Programs," *United Press International*, July 14, 2006.

⁵⁶ "Missouri Virtual Instruction Program: Ticket to Mediocrity," Home School Legal Defense Association Web site, April 11, 2007, available online at <http://www.hsllda.org/hs/state/mo/200704110.asp>.