Washington State Digital Education Initiative Task Force Report

Task Force Report

Governor Gary Locke's
Digital Education Initiative for Washington State:
A Vision for 21st Century Learning

In February 2002, I convened this task force of leaders from education, business, and government to determine how Washington can best harness technology to provide statewide access to the highest quality and most diverse curriculum and learning tools available. My vision is that all students in our state - regardless of location, regardless of background, regardless of district resources - have access to great courses and great resources in every subject they wish to pursue.

We have a strong foundation on which to build. This foundation includes: (1) the K-20 Network, which connects every one of our school districts and soon, many of our public libraries, with high-speed data, video and Internet services; (2) an array of innovative teachers, schools, districts, colleges, universities, and public, private and nonprofit programs that are applying digital technology to education; and, (3) some of the world's leading technology companies and research institutions. I asked the task force to form a plan for the future that would leverage these resources, identify a path for delivering a variety of digital learning programs and resources and, at the same time, help Washington become a "magnet of innovation" in digital learning.

The task force rose energetically to the task, and worked tirelessly in a short time to complete this report. I would particularly like to thank Marty Smith of Preston Gates & Ellis LLP for chairing the task force, the William and Flora Hewlett and Bill & Melinda Gates Foundations for providing financial support, the Technology Alliance and the University of Washington for providing staff support; and all members of the task force for their hard work and creativity.

I'm proud to present the result here.

Gary Locke
Governor

Imagine the Possibilities...

In Bellevue, a high school course in Washington State History has used the Washington State Digital Learning Commons to connect with the state's tribal leaders. From their classroom, via a two-way videoconference over the K-20 Network, they talk with elders from the Nez Perce tribe who have assembled on the campus of Washington State University in Pullman. It is a meaningful exchange: students are stunned to hear the history of the tribe from people who lived it. Later that week, the class reviews original treaty documents through links on the site to the Center for the Study of the Pacific Northwest. Because of the Digital Learning Commons, these students feel a strong, personal connection with the state's first residents and learn state history in a way few will ever forget.

In Pasco, a first-year teacher wants to engage her earth science class using technology in the classroom but doesn't know how to take the first step. She logs onto the Washington State Digital Learning Commons and discovers an integrated collection of resources, training, tools and templates designed to help teachers. She finds real stories of educators who are using technology in teaching - the challenges they face, the pitfalls they encounter, and the successes they achieve. She quickly completes a tutorial that makes her comfortable with digital tools. Then she uses "how-to" pages that take her step-by-step through specific tasks to create a supplemental study on Washington state geological strata for her class. With help from the Digital Learning Commons, this teacher made the leap.

In Forks, a group of high school juniors finally have the chance to learn Japanese. Although their teacher is a seven-hour drive away, they meet by way of online interactive video three times a week to study verb forms, idioms and conversational techniques. Every Thursday, the group logs onto the Washington State Digital Learning Commons and connects in real time with students of the same age in Kyoto who are learning English. They converse with each other, switching from Japanese to English. Besides practicing what they have learned, they are fostering cross-cultural friendships that may come in handy if, in the future, they do business with one another as trade partners. To the people who built and maintain the Digital Learning Commons, these students, on both sides of the ocean, say "Thanks" and "Arigato Gozaimas."

Meeting the Objective

This task force was chaired by intellectual property attorney and community leader Marty Smith of Preston Gates & Ellis LLP, and was comprised of leaders from the education, business, government and nonprofit sectors representing diverse communities across the state. Members were selected because of their experience and expertise in emerging technologies in education, and included teachers, superintendents, software engineers, legislators, philanthropists and others. The complete task force is listed in Appendix A.

Project funding was provided by the William and Flora Hewlett Foundation and the Bill & Melinda Gates Foundation. Consulting and technical support were provided by the Office of Educational Partnerships and Learning Technologies and the Office of Educational Outreach at the University of Washington. Fiscal oversight and staffing were provided by the Technology Alliance.

The scope of this study was to consider how to deliver a statewide digital learning initiative quickly, effectively and equitably, thereby improving student achievement while taking advantage of all of the excellent existing efforts underway in scattered areas throughout Washington. The task force focused on determining a vision for the future and workable first steps to achieving it, but challenges of implementation were also identified.

The task force recognized that significant work needs to be done on the issues of computer access, teacher training and technical support and that these issues are being addressed by the updated Washington state K-12 Education Technology Plan. The Office of Superintendent of Public Instruction (OSPI) is working on this plan with advice from its Educational Technology Advisory Committee, consisting of representatives from a wide range of educational stakeholders. This updated plan should be completed by September 2002, and will include recommended technology competencies for students, teachers, and educational leaders; infrastructure and networking standards; and, recommendations for professional development, funding, and support. Any efforts that are undertaken as a result of this report, should work closely with, and compliment the efforts undertaken as a result of the updated Educational Technology Plan.

Over a period of five months, the task force pursued the following lines of inquiry:

1. Local Landscapes. The task force identified and analyzed the technology assets, digital learning programs and related resources currently available in Washington state.

2. Other States and Countries. The task force examined what other states, regions and countries were already doing in the digital learning arena. In consultation with the Hewlett Foundation, the task force chose to study ten different digital learning initiatives, mostly government-led. A team from the University of Washington conducted extensive research and interviews to summarize the features, funding sources, benefits and drawbacks of these programs.

3. Washington State Communities. As the first two efforts were being completed, task force members and research professionals visited six communities, a cross-section of the geographic diversity of Washington state. In Forks, Seattle, Bellevue, Pasco, Toppenish and Omak, local people were queried on their ideas, aspirations, and concerns regarding digital learning. At local schools in each of these communities, the task force organized community forums, one of which was attended by the Governor. Parents, teachers and community members were invited to speak. Also in each of these communities, the task force conducted professionally structured focus groups with middle school and high school students and their parents. In addition, a research team conducted telephone interviews with 200 Washington students and parallel interviews with their parents, 400 phone interviews in all. The complete findings from the forums, focus groups and phone surveys are available in Appendix D.

4. Task Force Analysis. While investigations were proceeding, the task force met as a whole six times, twice with the governor. Individual task force members and staff met numerous times to address particular issues in more detail, define a workable way to realize the Governor's vision and create this report.

Task Force Findings

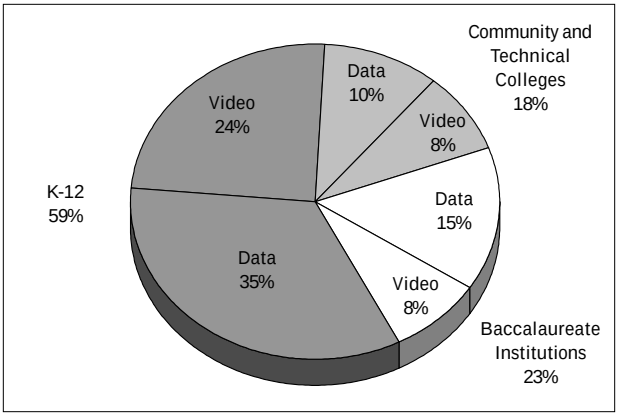
1. LOCAL LANDSCAPES

Washington's existing educational assets and infrastructure provide a solid foundation on which a comprehensive, exemplary, digital learning initiative can be built. It is clear that there is a wealth of high quality tools, programs and resources, a sum of parts that can be unified into a powerful whole.

Some of the most important assets are described briefly below, with additional information available in Appendix B.

State Network Infrastructure. The K-20 Educational Telecommunications Network (the "K-20 Network") is a high-speed telecommunications backbone that enables the use of the Internet and live two-way videoconferencing. It now connects 430 public education sites throughout the state including campuses of community and technical colleges, public libraries, regional universities, research institutions, and K-12 school districts and educational service districts. The K-20 Network provides state-funded connectivity to one central point in each K-12 school district, while connectivity to school buildings and networks within school buildings remain each district's responsibility. The K-20 Network also provides direct access to Internet2, the high-performance, next generation Internet (called "Abilene"). As a result, Washington's schools have unique opportunities to develop and utilize the next generation of Internet resources, applications, and tools. The extent to which schools currently exploit the K-20 Network's potential to improve student learning varies dramatically within and between districts, depending on local funding and motivation.

K-12 Classroom Connectivity. A K-12 Building Technology Inventory conducted in March 2001, by the Office of the Superintendent of Public Instruction ("OSPI") found that 95% of the instructional classrooms in Washington state can now access the Internet from one or more computers in their classroom, though less than 57% of the instructional computers currently in use met the recommended minimum statewide standards. The prevalence of outdated equipment results in a student-to-computer ratio for "standards-based computers" of less than 7:1. Regarding connectivity speed,

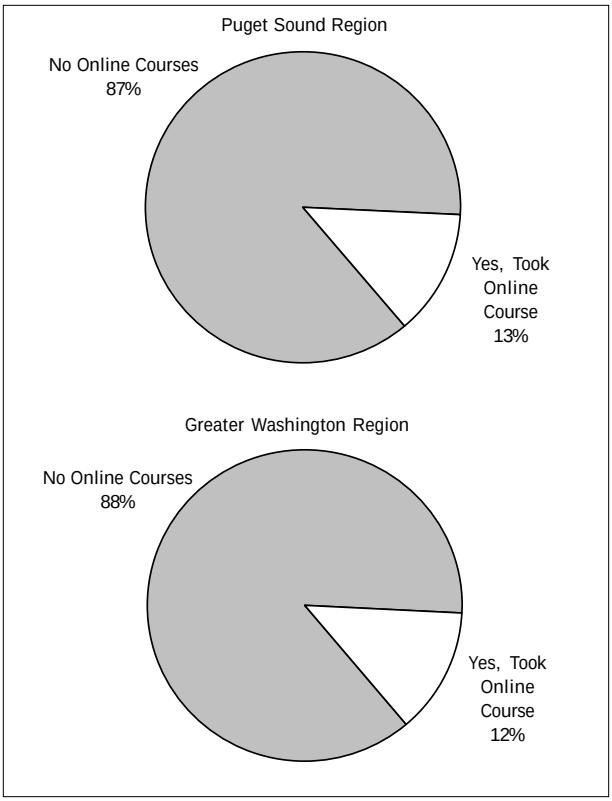


K-20 Network Capacity by Sector

over 40% of school buildings have T-1 or higher access to the Internet. Regional public utility and cable fiber projects will likely increase broadband access for many schools in the next few years, particularly in rural areas.

Current K-12 Use of Online Courses. A survey conducted in November 2001, by OSPI and the Educational Technology Support Center (ETSC) Program found that 25% of the secondary schools in Washington state had students enrolled in online curriculum courses during the 2001-2002 school year, with a total of approximately 3,432 K-12 students enrolled during the school year in online courses. Similarly, the task force's telephone survey determined that 13% of the children surveyed had taken an online course at some time in their educational life, and that over half (53%) of these children received credit for online courses from their local school or district. There are currently no statewide policies on the use of online courses, though some districts use the State Board of Education's guidelines on Alternative Education to help shape their local policies. In addition, each of the state's 296 districts decide independently if they will grant credit for online courses taken by students, and determine on its own what courses meet its quality and content requirements.

Online schools in Washington include the Federal Way Internet Academy, the Evergreen Internet Academy (Vancouver), the Edmonds CyberSchool, the Christa McAuliffe



Taken an Online or Internet Course in Past Year
By Region of 6th-12th Grade Student

Academy (Yakima), the Washington State Virtual Classroom and Virtual UW in High Schools. The ETSC Program and the nine Educational Service Districts (ESDs) have made agreements available for K-12 schools in the state of Washington for discounts on online courses from Apex Learning, NovaNet, and WebEd. In addition, OSPI is collaborating with Apex Learning to offer their ClassTools at no cost for Washington teachers and students over the next two years through a special grant. Although each of these entities maintains a Web page of information about their courses, there is no central clearinghouse of such information, and many districts and their students are unaware of the opportunities available.

Online Resources. Other resources include a statewide educational license to the ProQuest electronic database with over 3,000 magazines titles, MarcoPolo's free standards-based Internet content, and the ETSC's PILOT (Prepare to Integrate Learning with Technology) tool, an online, self-assessment tool for educators to determine their levels of technology proficiency and classroom application. Also, a number of grant-funded projects include significant online elements, including the SRVOP (Shared Reading Video Outreach), NO LIMIT (New Outcomes: Learning Improvement in Mathematics Integrating Technology), TELDEC (Technology and the Essential Learnings: Developing Effective Classrooms), TIP21 (Technology Infusion Project), SHARE, Generation Y, Using Digital Tools Project, and the Learning Disabilities and Technology Project. In addition, the University of Washington offers more than 270 credit and noncredit courses in various distance learning formats, many of which could be adapted to a K-12 audience. Now that the K-20 Network is connected to Internet2 (via the Pacific Northwest GigaPoP), the UW is able to partner with K-12 schools in projects such as the Pacific Lighthouse. Again, though, lack of a central repository of online information prevents many schools from learning about and making use of these resources.

Professional Development. Several statewide professional development efforts can also provide support, including Educational Technology Support Centers ("ETSCs"), The Learning Space, Bill & Melinda Gates Foundation's Teacher Leadership Project, Intel Teach to the Future Project, Mathematics Engineering Science Achievement (MESA), Washington State LASER Project, and the University of Washington DO-IT Program (Disabilities, Opportunities, Internetworking, and Technology).

Washington State Library Resources. Washington state has a wealth of library resources: leading libraries at our state universities and colleges; the Washington State Library; local public libraries; history museums and others. Much of the material in these wonderful, unique collections has already been digitized. The Washington State Library, in addition to its role as the "corporate" library for state government and state agencies, has unique collections and holdings relating to Washington history, dating back to territorial times, with comparable collections for Alaska. It also holds the statewide license to the ProQuest database.

2. OTHER STATES AND COUNTRIES

In an effort to find successes to imitate and mistakes to avoid, the task force studied the following programs: Florida Virtual School, Utah Electronic High School, Concord Consortium Virtual High School, Michigan Virtual High School, Kentucky Virtual High School, and New Mexico Virtual School. Other models examined include LearnAlberta.ca, Australia Virtual Schooling Service, New Zealand Virtual Schooling Service, and Hawaii E-Charter.

Below is a summary of key findings regarding these programs. The complete report is included in Appendix C.

Purpose and Scope. The basic rationale for starting most programs has been to provide access to core curriculum and Advanced Placement courses not otherwise available to

students at their local schools. Most programs target high school students. None of the programs we contacted offer college-level courses or credit. Most participating students are enrolled in one or sometimes two courses at a time, while remaining full-time students in their local high schools. Course credit is generally accrued at the student's local school, rather than through a virtual school.

Course Development. In some cases, content is developed in-house by the sponsoring agency; in others, content is licensed from a commercial vendor such as Apex Learning or Intelligent Education. The Concord Virtual High School employs a unique model in which participating schools pay an annual membership fee and agree to create and teach one online course. In exchange, each course created and taught earns that school 20 student seats in courses of their choice. Courses are generally delivered by a proprietary software platform, such as eCollege, Blackboard, Jones Knowledge, or Lotus Notes.

Bandwidth. Most courses have been designed based on delivery via the lowest common bandwidth - the 28.8 kilobits per second dial-up access common in homes. Internet2 and other broadband applications are not in use. In practice, though, the primary access point for roughly 90 percent of the students enrolled in online courses is the local public school, rather than the student's home.

Teachers and Mentors. The virtual institution generally contracts with state-certified high school teachers, who teach the courses and are available to students for consultation via e-mail or telephone. Most programs also require the student's local school to provide an onsite coordinator or mentor (who may or may not have subject matter expertise).

Funding. The most common source of initial funding for most programs has been a one-time state government appropriation, with ongoing funding from the state as a general fund line item. In some states, notably Florida, the legislature is now pushing the virtual institution to become largely self-sustaining, with less than 25 percent of the funding to come from the state in the future.

Scale. Annual budgets by U.S. state governments, excluding start-up costs, for the online schools studied range from $400,000 (Utah) to $6 million (Florida). Enrollment ranges from 600 students (New Mexico) to 8200 students (Florida). Average class size ranges from 15 (New Mexico) to 35 (Utah).

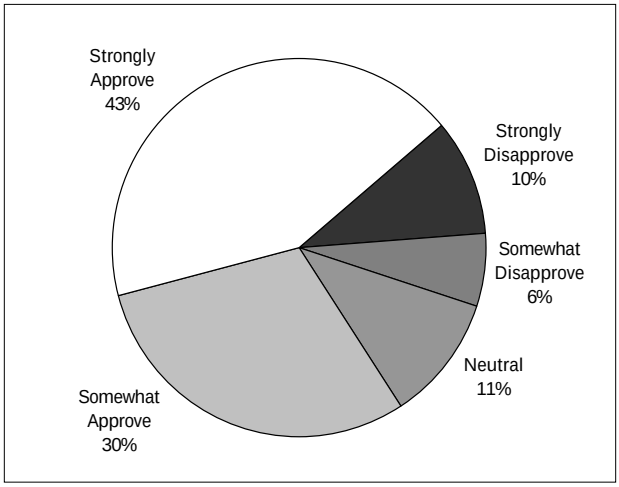
Other Models. The provincial government of Alberta is building a province-wide broadband network for schools, homes, and libraries, and creating a portal that provides access to an online reference and learning resource center for teachers, parents, and students. The government of New Zealand is creating a bilingual portal and Web community with educational resources for the education community. Hawaii E-Charter is a full-time, tuition free virtual charter school that offers a complete range of courses, grants credit, and awards diplomas.

3. WASHINGTON STATE COMMUNITES

The task force conducted forums and focus groups at the following locations: Forks High School, Nova High School and the Islamic School (Seattle), Pasco High School, Toppenish Middle School, Omak High School, and Bellevue High School. Over 400 professional telephone surveys with Washington state students and parents generated additional data. Responses in general indicated high interest and, in many cases, a strong demand for new digital learning opportunities. Key findings are described below. The complete findings from the forums, focus groups and phone surveys are available in Appendix D.

General Demand for Digital Learning. In the focus groups and forums, the task force heard broad support for the expansion of access to digital tools that would enable schools to offer more courses, tailor learning to individual needs, provide more choices for special-needs students, increase interactions among cultures and communities, and empower parents and students. The telephone survey data showed that a large majority of parents approve the development of online education for Washington's middle and high school children (73% either indicated "strongly approve" or "somewhat approve").

Specific Areas of Interest. In the area of online tools, students participating in the telephone survey expressed

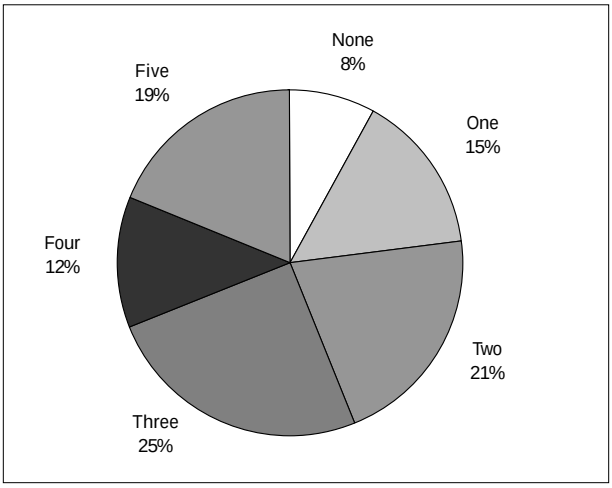


Support for Development of Online Education
All Households

strong demand for personalized educational Web sites, catalogues of online courses, and collaboration and communication tools. In the area of online courses, students expressed high or moderate interest in courses granting Advanced placement (AP) or college credits (77%), honors courses (69%), electives (66%), and core subjects (64%). Specific subjects students expressed high or moderate interest in were computing and technology (64%), world or foreign languages (60%), history and world cultures (59%), science (57%), arts (56%) and math (56%). The most desired local support service was the before- and after-school Internet lab.

Perceived Benefits of and Concerns about Digital Learning. The telephone survey revealed that parents' interests in online education were driven by the desire for greater access to new resources (27%), more flexibility for student leaning styles (22%) and greater choice of courses (20%). Students and parents had somewhat divergent viewpoints with respect to the number of online classes to be taken. Students surveyed said they would take, on average, 2.74 online classes. Parents, however, were more conservative and would limit the number of online courses their children could take to an average of 1.90 classes (31% saying they would only allow one course to be taken, and 34% allowing only two). In the focus groups and forums, many participants cautioned against the danger of depersonalizing the learning process, but most were very optimistic that a well-designed program with leading edge digital tools would address that concern.

Rural-Urban Perspectives. Regarding interests, motivations and computer use, telephone survey statistics revealed little, if any difference in responses from the Puget Sound and greater Washington regions. Focus groups and forums demonstrated that rural communities see digital learning as a means of bridging the gap between urban and rural educational opportunities. In particular, they hoped that digital learning initiatives would provide access to a greater number of skilled teachers who are often not available in rural areas and would allow students and teachers to access learning resources, such as museum and library collections, which they do not have locally. Rural communities also particularly emphasized the opportunities for Hispanic and special-needs students - for example, online English-as-a-Second-Language courses. Urban communities view current digital learning opportunities primarily as a supplemental resource.



Number of Online Classes Students Would Take
All 6th-12th Grade Students (Per Grading Period)

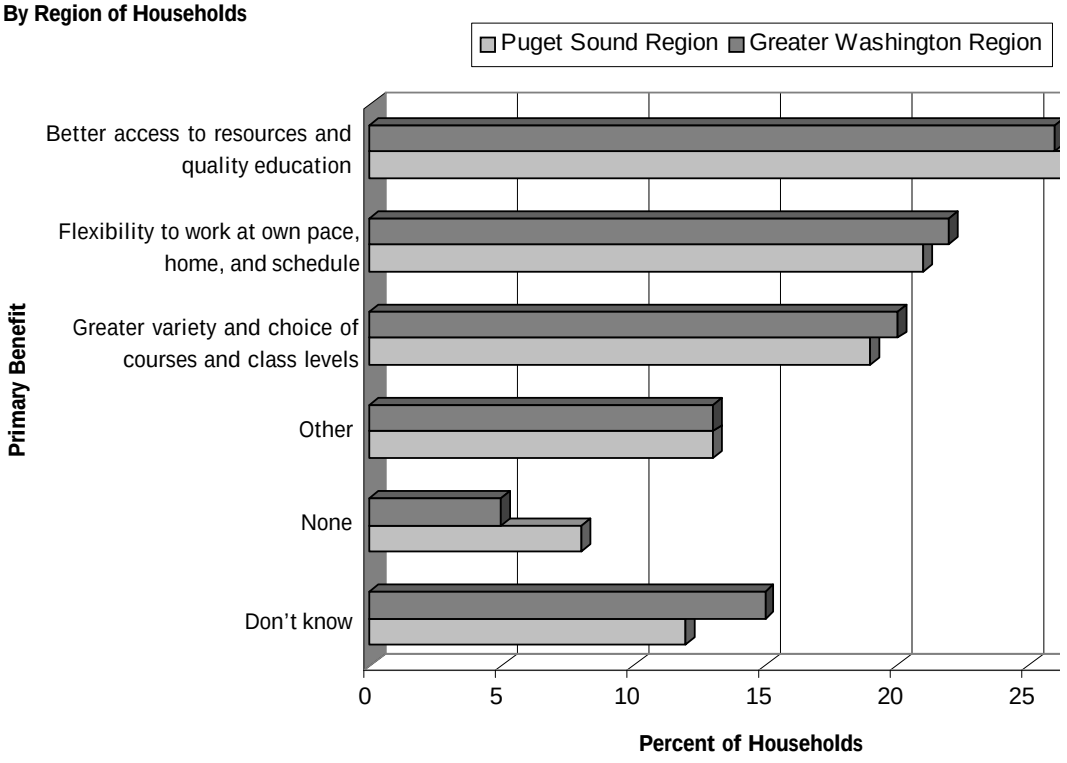
Quality Emphasis. The public participants in the forums, focus groups and telephone surveys strongly emphasized the importance of quality in digital learning: courses, tools, and content that are media-rich, interactive, and customizable to meet individual needs. Students currently enrolled in online courses urged the task force to aim to improve student access to online instructors, create a sense that the student is part of a learning community, and improve course content and design to take advantage of the high-bandwidth Internet access available in most schools.

Priorities. A strong consensus of all parents, students and teachers reached through the forums, focus groups and surveys support the creation of a statewide digital learning program that provides one-stop shopping for students and teachers to a broad array of online courses and digital learning tools through a single Web site. In terms of sequencing, they believe that the site should begin by providing a rich mix of support material and digital learning tools, adding high quality online course designs and materials as feasible.

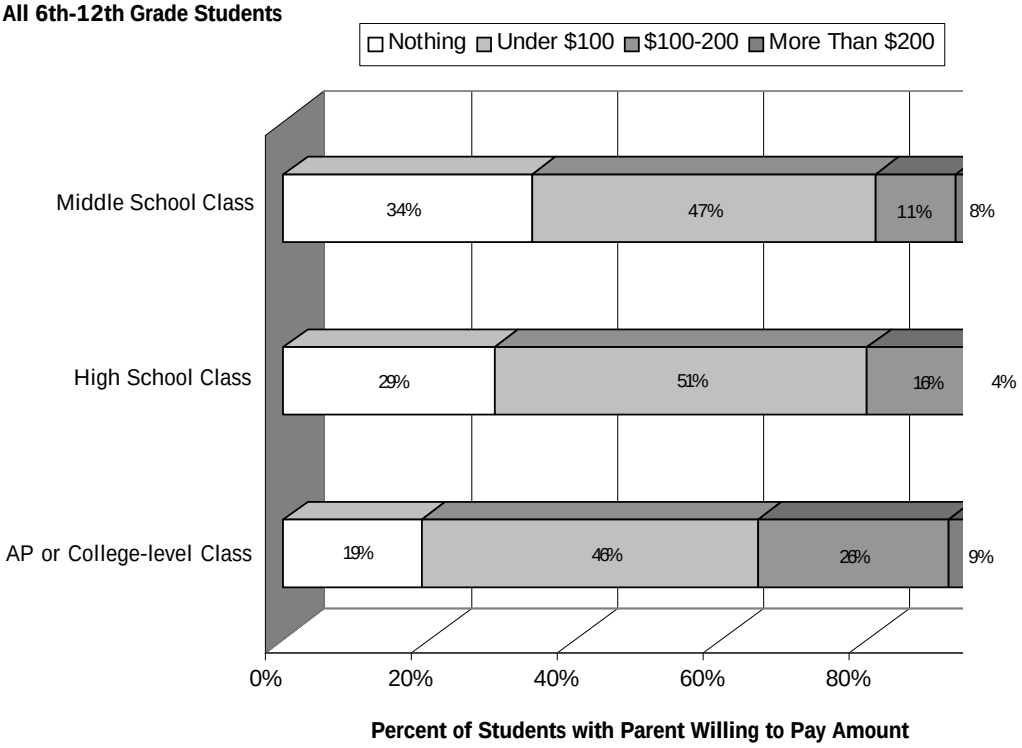
Funding. In the focus groups and forums, parents believed that in order to launch a statewide digital learning program, adequate funding must first be secured, so that digital learning and digital learning resources are "free" to all students and teachers. At the same time, parents hoped that digital learning will not be funded at the expense of local district or state budgets for traditional education. Participants in the rural forums and focus groups were especially strong in this belief. Telephone survey statistics show that 64% of parents said they would be willing to pay for an online middle school class, 71% for a high school class, and 80% for an AP or college-level class. Many parents would be willing to pay over a hundred dollars out of their own pockets for online courses for their children (35% for a AP or college-level course, 20% for a high school course, and 19% for middle school).

Shortcomings of Current Online Courses. Students in the forums and focus groups raised a variety of concerns with the current generation of online courses. These include lengthy delays in replies from online instructors, variable and

Perceived Primary Benefit of Online Education
By Region of Households



Amount Parents Willing to Pay for Online Courses
All 6th-12th Grade Students



unpredictable teacher quality, the opportunity for students to cheat on tests by using reference materials, "boring content," problems in obtaining course credits, and limited opportunities for person-to-person interaction.

High School Student Concerns. High school students also identified several deterrents to enrolling in online courses: fear of the unknown (versus traditional courses), perceived risk of failure and consequent impact on college or employment opportunities, lack of access to instructors, absence of structure and deadlines to motivate participation. These concerns were substantial enough for some students that they expressed reluctance to enroll in online courses, while other high school students were enamored by the possibility of learning at an individual pace and having access to courses not offered at their local schools.

Interest from Middle School Students. Middle school students and parents expressed particular enthusiasm for online courses. In their view, online courses would serve as a natural bridge between elementary school and high school, and the students were generally quite open to the idea of trying new learning methods. The telephone survey demonstrated that the number of online classes students would take was highest in middle schools (an average of 3.0 vs. 2.4 for late high school). However, parents of middle school students would allow fewer online courses than parents of late high school students (and average of 1.7 vs. 2.0).

Delivery Methods and Access. It was generally noted that access should be equitable and available to everyone. Parents and students agree that the primary access to digital learning should be at school, to ensure quality, accessibility, and the presence of traditional teachers or mentors. Access is less of an issue in urban areas than in rural areas, where there is more concern about the availability of computers and Internet connections outside of school. Rural communities particularly support access from public libraries and community centers.

General Advice. Several notable recommendations came from the focus groups and forums. Participants suggested that any digital learning effort choose an operational name that communicates ("virtual education" was uniformly disliked since it implied to many that the education received was not "real"). Focus group participants also suggested that the digital learning initiative should be kept commercial-free, not attempt reinvent the wheel (that is, make maximum use of currently available digital content), find means to build student-teacher relationships and a sense of community, and work to overcome access challenges to cross-cultural exchange. Many stated that digital learning is not a panacea, and not for everyone. Most agreed that any digital learning effort should involve a "personal touch." The telephone survey found that the most important course support features were a catalog of courses, local mentors or teaching assistants, in-school Internet labs outside regular hours, parent and student course satisfaction scores, and a central state board that grants accreditation.

Program Design Advice. Communities recommend that there be clear policies for student enrollment in online courses. Such policies should include the principle that enrollment is a collaborative decision among parents, students, and teachers made at the school level, and that student performance is monitored to assure that online opportunities are appropriate for individual students. Communities also recommend that this effort ensures there is adequate technical support, continues to involve citizen advisers, sets and maintains quality standards for online courses, accommodates special-needs populations, and provides professional development for teachers.

Timing. There was widespread agreement that "the time is now" for investing in digital learning: there are good models, a clear need, and proven benefits - both for tools and materials that supplement classroom teaching and for online courses. The communities that the task force visited would be enthusiastic participants in a proof-of-concept program for this initiative.

4. TASK FORCE ANALYSIS

As the research was compiled, the task force and its subcommittees met frequently to discuss the findings and consider its recommendations. Three important principles evolved that provided a foundation for the deliberations of the task force:

Students. The needs of students are our paramount concern. As one member of the task force put it, "students' interests trump."

Equity. The state should increase the number of educational opportunities available to all Washington state students, in particular to extend opportunities to schools in rural and economically distressed communities, schools that often lack the kinds of opportunities that many urban and suburban schools afford their students.

Opportunity. As the 10th grade WASL and Certificate of Mastery change the landscape for 11th and 12th grade students, well-prepared students capable of working at advanced levels must have access to enrichment opportunities. Students who are struggling in traditional classrooms and in need of additional support must have access to customized learning opportunities, "intelligent tutoring systems," and supplemental materials tailored to their learning needs. All students and teachers in all schools must:

· Have easy access to rich learning resources and digital tools to supplement existing classroom resources;

· Be able to engage with each other across cultures and vast geography;

· Have the ability to connect with experts and expertise in technical fields and the sciences;

· Ultimately, have opportunities to ensure that the next generation will be the most productive, prosperous, and civically engaged in our history.

The task force was concerned that, because many other states were aggressively pursuing digital learning initiatives, Washington state and its children could be left behind without immediate action. A recent study by the Progressive Policy Institute, ranked Washington 27th amongst all 50 states in education technology. On the other hand, the task force was pleased to see the wealth of resources and programs currently available and underway in the state, noting the lack of a single unifying agency or program that could tie all the pieces together for a greater whole.

The task force felt that the state is ideally positioned to cause a central program to act as a unifying force. In orchestrating a centralized effort, the state can leverage all the programs and excellent work already being done on the local level by teachers, schools, districts and Educational Service Districts ("ESDs"). For instance, many districts are creating and/or buying their own proprietary solutions for digital learning. With a centralized operation, the state can avoid duplication and create efficiencies with aggregated buying power and a statewide viewpoint.

The task force looked at the way the K-20 Network was built as a model for this effort: the designers of the Network observed and learned from the early efforts of other states, developed a concept that worked for Washington, and then organized many players into a single unified effort. The result is a widely admired and robust network that was one of the first five in the country to be connected to Internet2.

After studying all of the collected data, including the opinions of our citizens, programs in other states and countries, and our existing assets, it was the unanimous consensus of the task force that Washington state should work to build a digital learning initiative that: (1) impacts the largest possible number of Washington state students, teachers and parents; (2) offers more than just the online courses offered in many states; (3) takes advantage of the wealth of existing resources already in existence, either within Washington state or outside; (4) is built with an eye on the future of education and technology, and not built on the past; and, (5) creates a "magnet of innovation" that draws the best providers to Washington state.

At the end of the deliberations, the task force developed an overall approach for such an effective statewide digital learning program, as well as a workable "first step" toward implementing the solution.

Recommendations

1. Create the "Washington Digital Learning Commons."

Because the findings demonstrate there is an urgent, significant demand for digital learning and digital learning resources, because the state's existing investments have created many components which, if united under a centralized state organization, would serve this demand well, because in a vacuum only disconnected, duplicative, and inequitable results will occur, and because the time to embrace the opportunity is now, the task force unanimously recommends the creation of the Washington Digital Learning Commons.

As the accompanying diagram shows, The Digital Learning Commons will be a Web-based portal and operate from a single robust Web site, centrally hosted and integrated to the K-20 Network, where students and teachers from around the state will have access to the following:

Digital Resources. One section will be a repository for exemplary applications of rich multi-media digital content that will enhance curricula in schools. It will offer active links to a broad range of educational and cultural organizations such as science centers, museums and archives.

Learning Tools. Another section will provide customizable digital tools for students, teachers and parents, all accessed through a single user login. They include online technology integration tools that will help teachers and librarians incorporate digital resources, and a means for students to create personalized portfolios that can capture, preserve and present their work.

Online Classes. The third section will offer a continually growing range of media-rich, interactive, and engaging courses. These include middle and high school core, AP, ESL, adult education, workforce training and teacher training courses. These online courses will be delivered in a manner that is consistent with the guidelines listed in (4) below.

2. Establish a dedicated non-profit organization to build and run the Washington Digital Learning Commons.

The Digital Learning Commons should be an independent, 501(c)(3), organization with a minimal staff and a board of directors who represent a range of communities and who are accountable to both funding agencies and stakeholders. This organization will build and maintain the site, adopt structures and incentives to integrate high quality materials with best practices in teaching and learning, and meet an ultimate responsibility to serve customers well. It will use existing infrastructure whenever feasible, subcontracting and licensing the best available tools and content. The decision of where the employees of the 501(c)(3) should be located, the organization that hosts the Digital Learning Commons and other decisions should be made by the Digital Learning Commons board, after appropriate study by staff and input from stakeholders.

Part of the mission of the Commons will be to develop a quality assurance process (with critical stakeholders in the education community and beyond) and a method for vetting middle and high school courses. The task force discussed having an existing 501(c)(3) take on this overall task, but is of the firm opinion that the project will be most successful if this organization's only function is the creation and operation of the Digital Learning Commons.

3. Use a phased approach, beginning with a proof-of-concept.

By beginning on a small scale with a "proof-of-concept," the Digital Learning Commons organization will concentrate on delivering a rich experience to participants while field-testing implementation strategies, policy options, organizational structures and funding ideas.

Initially, the proof-of-concept will involve enough middle and high schools to capture statistically valid, representative data from 7-12 grade users. Participating schools, representing a diverse cross-section of urban and rural, poor and affluent

communities, will be selected for their willingness to support students, their connectivity to the K-20 Network and, to some degree, their ability to provide technical support. In order for the proof-of-concept phase to be successful, strong local support (school boards, school administrators, teachers, students and parents) will be essential. The 501(c)(3) should work diligently to locate communities willing to make this commitment.

The schools participating in the proof-of-concept will field-test all three sections of the Digital Learning Commons: digital resources, learning tools and online courses. Even in the initial phase, however, the resources section should be available to all state teachers and students.

Financial support for the proof-of-concept phase should be a mix of private grants and development seed money from the state. The task force firmly believes that, the current fiscal situation notwithstanding, the state must take a leadership role in providing start-up money for this effort. The balance of the funding should be sought from private donors and federal grants. For the initial phase only, participation will be free to schools and users.

The "proof-of-concept" phase will run for approximately two years. Throughout this time period, the site will be evaluated on a host of criteria, including but not limited to: level of use and re-use, level of satisfaction of users (students, teachers, parents, and administrators), costs, technical support needs, and ability to meet teacher professional development needs. In addition, the online courses will be specifically assessed regarding course completion rates and impact on school curricula.

During the initial phase, the 501(3)(c) will continually analyze feedback, improve the offerings and refine the delivery of the services of the Digital Learning Commons. After approximately a year, the organization should begin developing a plan for long-term operation that addresses issues of rollout, funding, fees and sustainability. By 2005, after two years of field-testing, a statewide launch should be possible.

4. Use these guidelines in creating the Digital Learning Commons:

Access. Ultimately, location should never be a factor limiting access to learning. Students and teachers should have the ability to access course work and other Digital Learning Commons resources anywhere, anytime using any Internet-enabled device available now or in the future. Initially, resources, courses, and services can be designed assuming primary access will be from school with after-hours access from public libraries and, ideally, community centers via the K-20 Network.

Technical support. It should be seamless, covering any type of Internet-enabled device with a reliable system in place to assist any student needing reasonable support. Such a vision would require an integrated K-20 administered technical support system reaching to every school, classroom, public library, and community access point. It is assumed students and teachers accessing courses remotely would be responsible for providing/maintaining their own connection to the Internet and the device they are using to connect.

Student support. Every school should have a support structure to provide students with academic advising on course selection and guidance on how to be a successful learner in an online environment. The structure should facilitate the credit granting process and create support groups ("clubs") of online students within a particular school. Home school students and adult learners could also use this school-based academic support network.

Teacher training. The Digital Learning Commons should work with existing teacher training programs such as those in development by OSPI, the various colleges of education around Washington state, The Learning Space and the Teacher Leadership Program to integrate teacher training with the guidelines used to determine quality materials. Programs must be designed and made broadly available that will provide future Washington teachers with the best online teaching practices and demonstrate how to use technology effectively in education before they enter the profession. Similar programs must address the training needs of our existing teachers. While the courses would be taught and administered by existing teacher training programs, they could also be offered online via the Digital Learning Commons. Standards of judgement could be informed by and congruent with standards emerging from the Western Cooperative for Education Technologies and other established professionals.

Collaboration. The Digital Learning Commons should work to encourage significant collaboration amongst a host of existing state resources. For example, the Washington State Library could foster collaboration among libraries throughout the state in support of the Digital Learning Commons, including perhaps the creation of a "virtual reference service" that lives on the site. Similarly, the State Library could also take a leadership role licensing content (similar to its existing license for the ProQuest database) for the Digital Learning Commons. In addition, the State Library could, in partnership with university libraries, undertake professional development for librarians in support of the Digital Learning Commons.

5. Leverage state expenditures with the Digital Learning Commons by incorporating state-purchased digital content and tools, and by encouraging agencies that create publicly funded digital content and tools to share it here.

Students and teachers should be able to more easily access quality digital learning content and tools. There currently exists an enormous trove of quality educational materials in digitized content. Many of these resources are either publicly available or could be utilized by students and teachers for a nominal fee. However these tools and content are often not available to teachers, or when available are not nimble enough to be useful. Several public higher education institutions in our state possess collections of quality technology-based content and tools and have used these to increase the efficacy of education at their institutions. The state, when funding with state tax dollars the creation of digital collections should think about whether such collections should also be required to be made available on the Digital Learning Commons. Similarly, when funding the creation of physical infrastructure (e.g. museums), the state should consider whether as a part of such funding the recipient agency should be required to make a portion of its physical collection available to our state's students and teachers via the Digital Learning Commons.

6. Build upon the infrastructure laid by the K-20 Network to continue expanding broadband access directly to libraries and classrooms across the state.

In order for students to use digital learning resources, they must have access to computers connected to the Internet. Because access to updated computers and adequate bandwidth at home varies widely from student to student, it is the responsibility of the state to ensure that access to broadband resources is available via easily accessible public institutions. The in-state routing efficiency and dedicated video capability of the K-20 infrastructure enables superior quality delivery, an existing asset that should be fully utilized.

7. In consultation with educational stakeholders, the state should establish a process to review digital courses and decide upon a statewide 'standard credit' which will be the minimum credit districts will award to students who complete those courses.

Students should receive equivalent credit for online courses as for courses onsite. Currently, the State Board of Education sets broad criteria for courses required for articulation and graduation, and then local districts have discretion as to how much credit to award a particular course. This model has served us well up to now, but it does not work when a course is delivered in a digital format for the simple reason that locality is no longer a controlling factor. When an online course can be offered to 30 different students in 30 different districts, it no longer is feasible to have each district review each course at a district level to decide the amount of credit students should receive. For digital course providers this creates a barrier to offering courses in Washington state by requiring them to spend the resources to work with each district to set course content. Quality control becomes overly burdensome when a course must go through a credit assignment process and be measured and qualified when it is only offered to a single student. Clearly, a new process is needed that involves educational stakeholders, and responds in a timely and efficient way to the new opportunities presented by digital courses.

8. Expand the number of in-service courses delivered to educators via digital media, and modify existing Salary Schedule and Continuing Education requirements to encourage digital professional development.

Educators should be encouraged and empowered to complete required credit hours with courses delivered via digital media whenever appropriate. Current programs that offer ongoing education to teachers often have standards set entirely by "seat time", although there are some provisions already in place that can allow them to move beyond this limitation. Seat time is not an effective measure of learning for digital courses since they are taken at varying times and require a high degree of self-study work by their very nature. As educators take courses delivered via digital media, they will become more familiar with the character of these learning tools and better able to take advantage of the benefits of new technologies. Digital courses also offer increased flexibility for educators' busy schedules.

9. Develop a policy that allows students in grades 7-12 to transfer their state funding apportionment to the provider of a digital course if the student has parental approval, counselor input and the course has been accredited by the state. Any such policy should address the concerns described below.

Students should be able to take accredited courses deemed necessary by them and their parents to receive a quality education. Many Washington secondary schools encourage their students to take digital courses, and some even offer funding, mentoring, computer lab access, and other support to students in such classes. However, some schools and districts have enacted barriers to participation, for example, policies requiring students to obtain their superintendent's approval before the student is allowed to enroll in an online course. Two of the major motivations for such policies are concerns about the quality of online offerings and concerns about the financial impact of allowing students to enroll in online courses.

The concerns about quality are not unfounded; there is a range of quality among online providers of coursework just as quality varies from school to school. The task force believes that since funding would only be required to be released for accredited courses, the quality concerns will be minimized under the task force's proposal. Particularly in small schools and districts, the overall impact of reductions of any size in funding can be dramatic as an overall percentage of budget, as hardships can arise when the funding is released to online providers, reducing the school's funding for that year.

Funding for the costs of student enrollment in courses was one of the harder issues that the task force addressed. After lengthy discussion, the task force was of the unanimous opinion that the student's interests should prevail: if an online course has been accredited by the state, the student's parents have approved and counselor input has been obtained, districts should be obligated to pay the provider of the online course, up to the amount of the state apportionment.

The task force recognized, however, that these and other legitimate concerns need to be studied and potentially addressed during the proof-of-concept stage: (1) the expenses the district still incurs in connection with such a student, be it in access to a computer lab, the provision of an online mentor, the availability of a counselor etc.; (2) the unpredictable and vacillating number of students who may elect to enroll in online courses each semester may lead to peaks and valleys in a district's budget that create financial timing difficulties, staffing difficulties, et cetera; and, (3) timing issues related to how much advance notice a district receives of the number of online courses that will be taken.

The task force does not believe that these issues warrant restricting the student's ability to take an accredited online course. Rather, these and other potential impacts to the local districts should be studied with thought being given to how to minimize the impacts on district budgets while maximizing student options. Consideration might be given to having a portion of the state funding apportionment stay with the local district to offset local expenses, special rules on the timing of enrollment in online courses, or a limit on the number of online courses that can be taken at a given time, or other possible qualifications.

10. Use these guidelines for designing and offering online courses:

Community. Online courses need to be designed to create the sense of being part of a learning community. They should re-create a positive classroom culture for students and teachers.

Course Communication. Many online courses offered today fail to connect teachers and students in a timely and meaningful way. Courses should be built with robust communication enabling tools and an effective plan to use them.

Clear Expectations. Many students need more structure in what most of them perceive as a nebulous new learning environment. Online courses should explicitly state and implement timelines, due dates, and grading criteria.

Course Coordinator. An online course coordinator should be available at each school offering online courses. The online course coordinator would serve as a local mentor to whom students could go any time to talk about their online learning experiences. The online course coordinator could be an existing teacher, a school counselor, a retired schoolteacher, or a qualified community volunteer.

Accreditation. As noted in Recommendation #7 above, courses should be vetted by a central agency and accreditation should be approved on a statewide basis.

11. Use the proof-of-concept to address these online learning issues:

Course and Content Access. If resources are designed assuming the school is the primary access point, will students be able to work on courses from home? Will there be a technical support system in place to deal with the inevitable course connectivity and remote authentication issues? Should

an access collaboration plan be developed with public libraries and other public technology access points to offer access away from school?

Course Delivery. Will the state create proprietary course delivery platform software? Or will it contract with existing companies such as Intelligent Education Inc., Jones Knowledge Inc., WebCT or Blackboard.com? Or will it work with higher education institutions that have such software, such as the University of Washington and Washington State University?

Cheating. Offering courses online presents academic honesty questions that need to be addressed. Field-testing in the proof-of-concept phase will provide valuable feedback.

Course Dropout Rates. Other states are experiencing large dropout rates in online courses. Experiences in the proof-of-concept phase can help identify and resolve the problems that cause students to fail in the online learning environment. Washington State University already has evidence that design and training can mitigate this problem.

Home Schools and Private Schools. Washington state has a significant number of home-schooled students, and the Digital Learning Commons could hold much promise for the education of these children. The proof-of-concept phase should be used to determine how the Digital Learning Commons can best provide resources and tools for this segment of our population. A related topic, also requiring additional research and investigation, is whether (and on what terms) the Digital Learning Commons should work with the private school students in our state.

Other Issues. There are other obvious issues: teacher recruitment/training, student support, technical support, and assessment (formative and summative). The proof-of-concept should explore these issues and also document any unanticipated and unintended consequences that emerge.

12. Provide ongoing state funding for the central operation of the Digital Learning Commons.

The Digital Learning Commons will serve as the online interface for learning resources, learning tools and digital courses. It will not offer courses or collect tuition, but simply list current information on all the available online classes that have been accredited. Payment for online course enrollments will be directly transferred from the school to the approved vendor.

Because it will serve as the primary statewide interface, the Digital Learning Commons will require ongoing funding for:

1. Central operations, including aggregation of content, creation of tools and resources, evaluation of offerings, and technical support and maintenance;

2. Enterprise activities, including expansion and innovation.

The task force strongly believes that the Digital Learning Commons, when built, will be a common, shared infrastructure for the state's education system, and accordingly will need reliable, sustainable funding in order to be successful. The funding for central operations in particular will need to be very stable and predictable. For this reason, we recommend that the state allocate funds for this purpose.

For course tuition, as outlined in Recommendation #9, we recommend that primary funding come from school districts. For enterprise activities, the Digital Learning Commons may be able to obtain private and federal grant funds.

As a funding model, the task force believes that the K-20 Network may be the best model to follow, namely, one where the common, shared infrastructure is funded by the state and the balance is picked up by local users and other funding sources.

The Public Good

Education in the 21st century will be more important than at any other time in our state's history. For our graduates to be gainfully employed, for our businesses to have the workers required to successfully compete in an increasingly competitive global market, for our local and state economies to be strong and growing so that a reliable tax base exists to support government provided infrastructure and services, all require that Washington state provide world class educational opportunities for all of our citizens.

The challenge to provide such rich educational opportunities comes at a difficult time for our state. As noted earlier, many other states are aggressively putting millions of new dollars into their educational systems, especially in the area of digital learning. All of this is occurring at a time when Washington state is facing tremendous budget shortfalls.

Unfortunately, not only is the competitive bar being raised for us in difficult economic times, but we have also seen, in the last few decades, an accelerating divide between Washington state communities, especially between rural and urban. While income differentials have primarily driven this divide, there also exists in our rural communities fewer educational resources and opportunities than those found in urban environments, separate and apart from issues of income. Whether lack of class size or the availability of a trained teacher prevents a calculus class from being offered in Bridgeport or a foreign language class from being offered in Wapato, the lack of these opportunities is real and limits the aspirations and potential of our children in these towns.

The yearning in our rural communities for more educational opportunities is nowhere more apparent than in the utilization data from the K-20 Network. When we look at where the "bits" of data and video on that network travel to, we learn that on a gross basis 68% of data traffic and 43% of video traffic travels to urban communities, with the balances going to rural schools. However, when we look at this data on a per student basis, we find that fully 63% of data traffic and 83% of the video traffic goes to rural schools. Needless to say, the K-20 Network has become an educational lifeline for many of our rural communities.

With knowledge doubling every seven to ten years, it is no surprise that many in our educational communities are reaching out to the digital realm to help educate our children. Teaching from 20-year-old textbooks in an age of information, is simply no longer an option if we truly want our children to be adequately educated. Expecting teachers, many of whom were trained years ago, to be able to teach today's knowledge without outside help and resources is pure folly. Similarly, expecting teachers to engage today's "digital children" through traditional stand-and-deliver lectures is expecting more than can be accomplished.

Despite, however, increasing competition from other states, urban/rural, rich/poor divides in our state, and the ever increasing amount of knowledge in this world to be taught, we have before us a unique opportunity to use the very technology that creates many of our challenges to expand and improve the education of our children.

The creation in this state of a statewide Digital Learning Commons is absolutely "the right thing to do at the right time." Just as the creation of the K-20 Network was the right thing to do to create a statewide, high quality, reliable infrastructure to enable our schools to connect to each other and to our institutions of higher learning, now is the time for our state to take the next steps and to provide the tools, content, and resources to enable all students in our state to obtain, regardless of location or family income, a truly 21st century education. The Washington State Digital Learning Commons will provide us with the opportunity to:

· Make more resources available to teachers to do their jobs in a better way, with less time having to be spent seeking out such resources on their own.

· Provide students with tools and resources to improve their educational opportunities and hence their education.

· Offer tools and resources to parents to enable them to become more directly involved in their children's education.

· Break down barriers across our diverse state in a manner

that we eventually become, truly a single community of learners.

· Avoid expensive, duplicative efforts from being undertaken by multiple school districts around the state in the area of digital content and tool creation.

· If educational changes lead to smaller schools being formed, have an infrastructure in place that truly allows for any child anywhere, any time, regardless of school or class size, to take any approved educational course.

· Utilize our existing infrastructure and other community assets, be it the K-20 Network, our public libraries, or the information and knowledge housed in our public universities and museums.

None of this however, will happen in a vacuum. The launching of such a program will only happen on a statewide basis if the state plays the key leadership role in lighting the torch. Once lit, this torch will serve as a beacon to draw together our disparate learning communities, to pool our collective resources and to globally improve our children's educational opportunities. Wouldn't it truly be great if every child in the state could write a letter similar to this one from Patrick Bennett in Forks, Washington? Think of the public good that would be accomplished.

My name is Patrick Bennett and I am a senior at Forks High, a 500-student high school located on the Olympic Peninsula in the rainforest town of Forks, the most far-western incorporated city in the contiguous U.S. We are a sports oriented community with our nearest competitor 2 hours away by school bus. Being a serious student and a three-sport athlete, I find my regular school day is often shortened and on some days, I am only in the classroom for 1 hour. Being absent from the regular class was difficult and I often ended up working on projects at 2 or 3 in the morning.

I first learned about VHS through my dad but it was Mrs. West, the VHS coordinator, who presented the VHS opportunity to me in such a way that it was too good to pass up. Subjects that I was interested in and could work on according to my schedule, teachers I could easily communicate with and classrooms open 24 hours a day. I could access the system from home, hotel rooms, school and friends' homes. With VHS I could download VHS lessons on my laptop work on long sports trips and then submit material when I returned home.

I am a serious student with a 4.0 GPA and I have found the VHS Virtual Classroom has allowed me to study with challenging teachers covering subjects not available in my high school. At first I went to the regular teachers asking for information or documents, but soon realized the amazing caliber of my virtual teachers.

Mr. Sanchez, my virtual government issues teacher quickly moved me into new and surprisingly challenging assignments requiring me to search for and study materials that were certainly not included in the regular curriculum. I soon found my friends were asking me about my assignments and I often shared documents or materials to aid their research and work.

Yes, I believe in the Virtual High School and am looking forward to exploring some of my Irish roots through my Irish Literature Class this semester. Yes, I will miss VHS next year when I attend Washington State University on a full football scholarship. More importantly, I feel more secure in attending a PAC 10 university from a small rural town because I have been successful in the virtual classroom. With VHS, I have been able to live in a safe and supportive community with the world just a keystroke away. Thank you, Mr. Droste, Mrs. West and all of my VHS teachers.

- Patrick Bennett

Appendix A

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Appendix B

List of Existing Washington State Digital Assets

State Network Infrastructure:

K-20 Network

The K-20 Educational Telecommunications Network is a high-speed telecommunications backbone that enables the use of the Internet and live two-way videoconferencing in all of Washington's public education sectors, and also connects the schools and sectors with one another. With its second phase completed in December 1999, the network now connects 430 public education sites throughout the state including campuses of community and technical colleges, regional universities, research institutions, and the K-12 school districts and educational service districts. The network is now in the process of adding all public library systems in the state (up to 65 sites) and 15 independent college sites.

The network is particularly valuable in connecting rural communities: on a per student basis, 63 percent of the K-12 Intranet usage and 57 percent of the K-12 video usage is by rural students. The K-20 Network provides connectivity to one central point in each K-12 school district, with WAN and LAN connectivity to school buildings being the district's responsibility. More information on the K-20 Network, including exemplary uses of the network, is available at http://www.wa.gov/dis/k20/.

Internet2 - http://www.internet2.edu/

Because of the K-20 Network, Washington was one of the first five states selected to have direct access to the Internet2, the high-performance, next generation Internet (called "Abilene"). As a result, faculty and teachers in Washington's schools will have opportunities to develop the next generation of Internet resources, applications, and tools - opportunities that were previously only available to faculty at major research institutions like the University of Washington.

Washington schools and teachers will also be able to bring into the classroom the latest customized Web-based learning materials and computer-based learning tools. Also possible is easy access to multi-media content from learning centers, national museums and organizations such as the Smithsonian Institution and NASA. Finally, the Internet 2 connection enables the ability to cost-effectively employ high-quality interactive and streamed video among teachers, across the state's classrooms, and to classrooms around the nation and the world.

K-12 Classroom Connectivity

A K-12 Building Technology Inventory conducted in March, 2001, by the Office of the Superintendent of Public Instruction (OSPI) revealed important points about connectivity. Fully 95% of the instructional classrooms in Washington state can now access the Internet from one or more computers in their classroom. However, less than 57% of the instructional computers in use met the minimum statewide standards recommended by OSPI. The student to computer ratio for "standards-based computers" is less than 7:1. The study also found that nearly all of the approximately 55,000 K-12 certified staff had e-mail accounts provided by their school district, while 76,098 of the 1,002,044 K-12 students had e-mail accounts provided by their school district. Complete survey results are available at http://www.k12.wa.us/edtech/survey.asp.

Over 900 of the state's 2000+ buildings have T-1 or higher access to the Internet, with most of the remaining buildings having lower-speed connections ranging from 56K to 786K. About $3 million in federal Emergency School Repair and Renovation Grants has just been awarded to help wire 80 Washington school buildings that still lack K-20 connectivity at all during 2002 and 2003.

Current K-12 Use of Online Courses:

State Survey Results

OSPI and the Educational Technology Support Center (ETSC) Program conducted a survey of use and interest in online curriculum courses in November 2001, and found that 25% of the secondary schools in Washington state had students enrolled in online curriculum courses during the 2001-2002 school year. During 2001-2002, approximately 3,432 K-12 students were enrolled in online courses. Complete survey results are available online at http://www.k12.wa.us/edtech/surveyresults.asp.

Online Schools in Washington
Several online schools are already operating in Washington, with several more under development. Current schools include the Federal Way Internet Academy (http://www.iacademy.org/), the Evergreen Internet Academy in Vancouver (http://egreen.wednet.edu/eia/newwebdata.nsf), the Edmonds CyberSchool (http://www.edmonds.wednet.edu/cyberschool/), the Christa McAuliffe Academy in Yakima (http://www.cmacademy.org/main.html), and the Washington State Virtual Classroom (http://www.wavcc.org/).

The oldest of these is the Federal Way Internet Academy, which provides online K-12 core courses to an enrollment of over 1200 students in 102 school districts throughout Washington, as well as several other states and countries. The courses are taught by and primarily developed by the Internet Academy's own faculty, who are Federal Way School District employees.

The Washington Virtual Classroom is a consortium of eleven school districts which have joined forces to use the K-20 Network for course delivery and staff development via videoconferencing and Web-based learning modules. Each of the participating districts is small, rural, ethnically diverse, and subject to significant levels of poverty in their communities. Collaboration enables these districts to offer curriculum that they would be unable to deliver independently.

Online Buying Cooperatives http://www.edtech.wednet.edu/onlineresources/default.htm
The ETSC Program and the nine Educational Service Districts ("ESDs") have made the following agreements available for K-12 schools in the state of Washington to purchase these products at reduced prices:

- **Apex Learning** - Provides ten online Advanced Placement courses and six Foreign Language courses.

- **WebEd** - A national provider of online professional development for K-12 teachers; offers online courses authored by leading education professionals.

- **NovaNET** - An agreement allowing schools to purchase an online library of interactive curricula for middle and high school students.

Other Online Resources:

ProQuest Online Database - http://www.psesd.wednet.edu/technology/dbservices.html
ProQuest provides online access to over 3,000 magazines titles and five Washington newspapers plus the New York Times. Schools can choose from several databases including eLibrary Elementary, JuniorQuest (junior high), Platinum (senior high) and Discovery (faculty).

ClassTools for Washington Teachers and Students - http://www.k12.wa.us/ap/classtools.asp
The Office of Superintendent of Public Instruction is collaborating with Apex Learning to offer a special support program at no cost for Washington state teachers and students until June 30, 2003, through a special grant. Teachers in both public and private schools may access this site. ClassTools provides ready-made lesson plans that meet the rigorous guidelines of The College Board, as well as interactive learning activities and course materials, as well as reviews, quizzes, online training, study tips, reading list, and Web links.

MarcoPolo Online Resources - http://www.marcopolo.wednet.edu/
MarcoPolo provides no-cost, standards-based Internet content, developed by the nation's content experts for the K-12 teacher and classroom. Resources found on the MarcoPolo Web site (marcopolo.worldcom.com) and the six partner Web sites offer teachers invaluable educational resources, and the WorldCom Foundation offers free training, across the country, so that teachers learn how to use this rich content in their classrooms daily. In Washington state, the Educational Technology Support Center (ETSC) Program is leading this effort in cooperation with OSPI and the nine ESDs.

PILOT Tool - http://www.edtech.wednet.edu/pilot/
The PILOT (Prepare to Integrate Learning with Technology) tool is the result of a collaborative effort among the ETSCs. The site serves many purposes: It is an online, self-assessment tool (aligned to the ISTE National Educational Technology Standards) for educators to determine their levels of technology proficiency and classroom application. Based upon the results of the assessment, it is a place for educators to view and select learning opportunities throughout the state to advance their proficiency level. In addition, charts can be displayed showing the overall level for teachers at a school site as well as within a district, region, or for the entire state. It is a learning community for educators to meet and participate in statewide projects. And it is a tool for districts to use with their staff to plan their professional development efforts.

SRVOP Project - http://www.srvop.org/
The Shared Reading Video Outreach Project (SRVOP) uses videoconferencing systems located in local school districts and Educational Service Districts to offer a reading enhancement program to deaf children, their families, and educators. For the first time, isolated deaf children living in remote areas-as well as their parents, other family members, and teachers-can see, interact with, and learn from skilled deaf adults and from other deaf children. During the 2001-2002 school year, more than 150 deaf children between the ages of two and ten years

old, their families, and school staff learned to read a series of popular children's books with Howie Seago and other Deaf tutors at 23 videoconferencing sites. Training originates at Puget Sound Educational Service District (PSESD), located near Seattle. Supplemental training and discussion groups for educational staff, provided via live interactive videoconferencing, are facilitated by a mentor teacher of the deaf throughout the year.

NO LIMIT Project - http://www.edtech.wednet.edu/nolimit/
The NO LIMIT (New Outcomes: Learning Improvement in Mathematics Integrating Technology) Project is funded through the Enhancing Education Through Technology grant program. The grant is focused on developing classroom models where students are using standards-based learning to improve their achievement of math skills. Teams of sixth and seventh grade teachers strive to improve teaching practices in mathematics through the integration of technology and other research-based methodologies. The project involves all students, particularly those in classrooms with demonstrated need based on student math achievement data, high poverty level and/or high technology need, and includes a component to address the needs of learning-disabled students.

TELDEC Project - http://edtech.esd112.org/teldec/
TELDEC (Technology and the Essential Learnings: Developing Effective Classrooms) is a staff development model that promotes best teaching and learning practices that increase student achievement. TELDEC develops classroom models where technology is used to support integrated curricula that cross the Essential Academic Learning Requirements (Washington state's learning standards).

TIP 21 Project - http://tip.esd113.k12.wa.us/
An e-Merging Project, TIP 21 (Technology Infusion Project) ties together school reform, student learning, professional development and technology as tool and context. Its vision is informed by the successes of the several previous successful projects it merges. It exploits K-20, recognizes that 21st Century learners should be knowledge architects, not simply consumers of information, and invites/prepares teachers to be guides and role models - adults learning in the presence of those who look to adults for direction. TIP 21 assumes collaboration as a necessity for community participation as well as preparation for millennial citizenry and so uses its technology-rich classrooms to help students learn the ways of collaboration while pursuing essential academic learning.

SHARE - http://share.esd105.wednet.edu/
SHARE is a project involving 22 Central Washington school districts, 63 other school districts around the state, 1100+ teachers, 15,000+ students and the ETSC Program of ESD 105. Each classroom educator is involved in: Web-based communication with parents/guardians/students through a classroom Web site, calendar, newsletter and syllabus; guided online student research; online collaborations with educators, the creation, development and publication of student-researched projects, developing and sharing project-based curriculum online; and facilitating structured student feedback on other student projects. Participating educators from all grade levels and subject areas are involved.

Generation www.Y Project - http://genyes.org/genwwwy/
The foundation for Generation www.Y is the extensive involvement of students as collaborative partners with their teachers, their school, their school district, and the local community to assist in restructuring education through instructional and telecommunications technologies. Generation www.Y originated in 1996 in the Olympia School District as a U.S. Department of Education Technology Innovation Challenge Grant (TICG). During the five-year grant cycle, 151 Washington state schools have used the model. When grant funding ended in 2001, Generation www.Y became the flagship offering of Generation YES (Youth and Educators Succeeding), an organization established to develop and deliver "revolutionary curriculum that helps schools effectively use technology."

Using Digital Tools Project - http://www.mtbaker.wednet.edu/tlcf/index.htm
The goals of the Using Digital Tools Project are to increase student achievement using technology-rich critical thinking activities in interdisciplinary applications; improve student writing and reading skills thru the use of online literature circles and other Web-based activities; improve student higher-order problem solving skills as they progress through an action research model in technology-rich projects; improve student communication skills by developing digital multimedia Web-based products and collaborating on Web-based projects; improve teacher technology skills as they use various digital tools; improve teacher collaboration, communication, and building-based problem solving using networked learning communities; and develop effective college/school partnerships using a 'virtual practicum' Web-based mentoring system.

Learning Disabilities & Technology Project - http://www.cwu.edu/~setc/ldtech/
The Learning Disabilities and Technology Project (LD & Tech) is a collaborative effort among participating school districts in Washington state, the Special Education Technology Center (SETC) at Central Washington University in Ellensburg, and RMC Research Corporation in Portland, Oregon. The project provides each participating school with a variety of computer

hardware and software focused on helping students with learning disabilities read and write effectively, keyboard successfully, and organize their thoughts. The project also provides the training necessary for teachers and students to use the equipment and software. As they mentor to other students, LD students have an opportunity to become experts in the use of certain technologies and to improve their own writing and communication skills.

Washington State LASER - http://www.WaStateLASER.org

Washington State Leadership and Assistance for Science Education Reform (LASER) is a K-8 science education reform initiative designed to increase the numbers of Washington students participating in quality science education programs. Working collaboratively with more than 80 school districts across the state, Washington LASER is helping these districts initiate, implement and sustain inquiry-centered science education programs. One of the initiative's key projects is to establish four LASER Regional Support Centers that will support the curriculum, instruction, assessment, materials/equipment and professional development needs of 900 elementary and middle school classrooms serving approximately 60,000 students.

UW Distance Learning Courses - http://www.extension.washington.edu/dl/

The University of Washington is the largest public university provider of distance education in North America, enrolling more than 10,000 students last year in 12 degrees, 25 certificate programs, and more than 300 credit and noncredit courses in various distance learning formats, mostly online. Many of these courses can be adapted to a K-12 audience, as demonstrated by (1) working with commercial providers such as Apex Learning to create versions of college-level courses for K-12; (2) piloting Virtual UW in the High Schools (VUWHS), which initially took an online version of Geology 101 to nine rural districts that had "best practices" elements such as onsite mentors and significant interaction between teacher and students; and, (3) continuing the VUWHS effort in college-level expository writing, involving several rural districts. The current onsite "UW in the High School" program offers high school students the opportunity to earn college credits in world languages, English, mathematics, and geology and can be extended to the online environment.

Statewide Professional Development Efforts to Support Online Use:

ETSC Program - http://www.k12.wa.us/edtech/etsc.asp

The Educational Technology Support Centers (ETSCs) are state-funded in support of Education Reform to improve technology infrastructure; monitor and report on school district technology development; promote standards for school district technology; promote statewide coordination and planning for technology development; and provide regional educational technology support centers, including state support activities. To help educators sort out the myriad of eLearning options and make informed decisions, the ETSCs are sponsoring two day-long eLearning showcases on August 19 at Puget Sound ESD (Burien) and on August 23 at ESD 101 (Spokane). The day will feature demonstrations and hands-on sessions with commercial K-12 eLearning products and resources, as well as the use of a checklist developed by the ETSC to help track and reflect upon how the products meet the needs of schools or districts. Further activities are planned that will assist school districts in the evaluation and provision of online curriculum products.

The Learning Space - http://www.learningspace.org/

This teacher based, non-profit 501(c)(3) organization is dedicated to providing educators with opportunities and tools to develop, implement and share effective uses of technology to improve student learning. Its goals include:

· Put technology in the hands of teachers to make an impact on student learning.

· Provide ongoing training and support for teachers, by teachers to facilitate the integration of technology into the teaching and learning cycle.

· Focus on how technology can be used to change the way teachers teach. As a result, students will use technology to gather, manipulate and publish information, giving them technological experiences that they will need for their future work environment.

T**eacher Leadership Project - http://www.esd189.org/tlp/index.html**

This $45 million grant program, funded by the Bill & Melinda Gates Foundation, is providing 3500 outstanding classroom teachers with an opportunity to learn how to integrate technology into the curriculum in their classrooms. Teachers attend workshops and seminars, participate in e-mail discussions, journal their experiences, and fulfill assessment and evaluation requirements. The Teacher Leadership Project is a curriculum-based project designed for full-time K-12 teachers who have their own classrooms and who see the same group of students each day. The training modules are designed specifically for teachers in the following areas: language arts, social studies, science, and math.

Smart Tools Academy - http://depts.washington.edu/academy/

Funded by the Bill & Melinda Gates Foundation and SAP America, Smart Tools Academy successfully trained over 1900 school principals and superintendents in 1999-2000. The mission of the Smart Tools Academy was to ensure that all Washington principals and superintendents, from public and private schools, share a vision and an understanding of the ways that

technology can support and improve student learning and academic achievement. Knowledgeable and inspired school leaders will, in turn, teach and inspire others - their colleagues, teachers, staff, parents, and communities - and thereby ensure that all children in Washington will master the skills they need to thrive in a technology- and information-rich future.

Intel Teach to the Future - http://www.learningspace.org/itf/
The Intel Teach to the Future program is designed to address the challenges that teachers face in effectively incorporating computer technology to enhance student learning. This professional development program emphasizes hands-on practice and the creation of curricular units and evaluation tools that comply with state and national academic and technology standards. Using a "train the trainer" model, participants will learn from current practicing teachers within their own districts. Participants will also have the opportunity to collaborate with other teachers to discuss ideas for introducing and using technology in the classroom, as well as develop a specific unit based either upon material currently being taught or a unit they would like to teach in the future.

Pacific Lighthouse
This digital media repository project is being conducted by the University of Washington and the Corporation for Educational Network Initiatives in California (CENIC). Many resources currently reside in digital collections or repositories located at institutions in Washington and California, but to date little has been done to make these resources available for practical use to K-12 schools. The pilot phase of this project will use existing and developing Internet2 technologies - including MediaWeb, a cutting-edge storage and distribution system - to deliver audio, HD and broadcast quality video and music, textual and graphical materials. Content sources include a range of libraries, museums, private organizations, educational institutions, and others, primarily located in California and Washington. Schools would begin using Pacific Lighthouse next January.

DO-IT (Disabilities, Opportunities, Internetworking, and Technology) - http://www.washington.edu/doit/
This University of Washington program promotes the use of electronic and information technology to maximize the independence, productivity and participation of people with disabilities, and provides professional development for K-12 educators and post-secondary faculty and administrators. It was the recipient of the National Information Infrastructure Award in Education, the Golden Apple Award, and the President's Award of Excellence in Mentoring; and showcased at The President's summit on Volunteerism. DO-IT is supported by Washington State, federal grants, foundations, corporations and private individuals you. It is the co-sponsor of AccessIT, the National Center on Accessible Information Technology in Education.

Appendix C

Study of Statewide Virtual Learning Initiatives

Conducted by the University of Washington

Introduction

This document provides examples of statewide virtual learning projects to the Washington State Governor's Task Force on Virtual Education. It includes information about rationale, leadership and funding models, approaches to student and teacher learning, and the technologies employed by virtual schools. General program characteristics are described, followed by some unique innovations and detailed information, examples, and resources from each state. The level of detail varies depending upon the amount of information available. Lastly, several alternative models to virtual education are described.

Widespread Program Characteristics

· All of the virtual high schools studied align course content to meet the lowest common bandwidth denominator; despite the fact most students access the online courses from schools enjoying T-1 connections. A small number of students access Internet courses primarily from home over a 28.8 Kbps dial-up connection. Concern about excluding this group of students has prevented most virtual high schools from developing high bandwidth enriched courses.

· All of the virtual high schools studied are fully accredited institutions, but none award credit or diplomas directly. The virtual high schools recommend a grade to the local schools who then grant the student credit.

· Virtual high schools generally offer a few AP and honors courses. However, the majority are high-school courses required for graduation. None of virtual high schools studied offer college-level courses. Virtual high-school courses are developed and taught mainly by certificated high-school teachers working in the state education system.

· Generally students are enrolled in 1-3 virtual courses as full-time students in their local high schools.

· The courses are usually delivered to students on the Web via a proprietary software delivery platform provided by Jones Knowledge Inc., Blackboard.com, or eCollege.

· About 90percent of students access virtual courses primarily at their local schools. Ten percent of the students access courses primarily from home. Public libraries and community technology centers serve as additional access sites.

· Initial funding for virtual education initiatives comes largely from grants and corporate sponsorship, and then shifts to ongoing state support.

Notable Program Features

· The Florida Virtual School has a comprehensive marketing and assessment program. Their course curriculum, teacher training, and online instruction methods have resulted in Florida Virtual School students scoring above the national average on the SAT and AP national exams.

· The Concord Virtual High School leads the cooperative approach to virtual high schools. In order for a school to participate in the online teaching cooperative it must pay a $6,000 annual membership fee and create and teach one course. In exchange, the school is given 20 seats per year in courses offered at the virtual school. This model has led to a wide variety of innovative high-school core and AP courses being developed for the Virtual High School.

· Communities in New Mexico have demonstrated creativity in providing access for virtual students by adding a virtual class period to student's daily school schedule each semester, and designating time slots in local community computer labs for virtual students during all open hours.

· The State of Michigan has allocated large amounts of funding for teacher technology training and professional development. In the last year, over $116 million has been devoted to the professional development of K-12 instructors.

· In Alberta, Canada, the provincial government is developing unique partnerships with public institutions and private companies to provide broadband

access to information resources making Alberta the "the most wired jurisdiction in the world."

FLORIDA
Florida Virtual School
http://www.flvs.net

Basic Program Facts:
· students in class: 25
· total students in program: 8200
· home-school students : 2624
· teachers: 75 FT
· classes offered: 200
· AP classes: 8
· program administrators: 40
· annual budget: 6 million
· current funding source: state legislature
· future funding source: move to a self-sustaining model

Why was the program started?
The Florida Virtual School (FLVS) started in August 1997 with the goal of empowering Florida families and students with educational choice, the choice being online courses allowing students to learn "anytime, any place, any path, and any pace." The FLVS offers a choice for students who want to take courses not offered at their schools of enrollment, have scheduling conflicts at their traditional high-schools or workplaces, need to make up credits in order to graduate on schedule, need a different learning environment, want to accelerate their academic program, or are enrolled in homebound/home-school educational programs.

Who does the program serve?
FLVS was designed to serve any high-school student in the state of Florida. From 1997 to 2001 the FLVS has grown from 70 students to over 8000. Fifty-four percent of students come from traditional public schools, while 37 percent are home schooled and 8 percent are private school students. Florida students, both public and home-school, do not pay a course fee. Non-Florida students may take a course for a per-course tuition fee of $150. In order to maintain a student's full time student funding status, Florida school districts allow a student enrolled in a public high school to take only one class per term via virtual education. The remaining courses must be taken at their local public high schools. In 2001, 79.11 percent of students were white, 7.2 percent black, 6.8 percent Hispanic, 3.52 percent Asian, 2.9 percent multiracial, and .49 percent Native American.

What does the program offer?
In 2001, the FLVS offered about 60 high-school courses. The majority of these courses were core courses required for graduation, although about 10 percent were Advanced Placement (AP) or honors classes. AP courses are scheduled to finish in time for students to take the national AP exam. The courses are designed by FLVS certified instructors in teams of two or three. Developers, instructional designers, and curriculum specialists employed by FLVS make sure that courses translate to a web-based environment. Each course undergoes a lengthy peer review process where other educators, students, and community members review it for functionality and design. All FLVS courses meet or exceed most state and national standards.
Course Demo: http://www.flvs.net/learn_more/demos_lm.htm

What is the program's approach to student support services?
Students are guided through their courses by their respective FLVS instructors. At any time day or night, students can open the http://www.flvs.net website, log into their classes, and complete work for submission. Students progress at their own pace, but this pace is monitored by course instructors. A Student Contact Form helps to ensure progress. Most of the learning materials for the course are available on the course website. There are no textbooks. FLVS also subscribes to an online library resource provided by Jones Knowledge, Inc. which is designed to supplement the course materials. Students at public schools also have access to their school libraries. Students receive academic advising by phone and email from two counselors employed by FLVS. Public-school students also have access to their school counselors. All course content help issues are addressed to individual instructors via phone and email.

Home-school students and public-school students working on a course outside of a public school are responsible for providing and supporting their own computer and Internet connections. FLVS sets a minimum hardware/software requirement to enroll in their courses (http://www.flvs.net/get_started/minimum-CPU.htm). Traditional public-school students enrolled in FLVS courses using computers at their schools rely on the varying technical support services offered at their individual schools. FLVS uses Jones Knowledge Inc. to provide the online course delivery platform called e-education™ and the online library services. A 24 hours a day/7 days a week phone-based technical support line is available for students having problems with their e-education™ course delivery software.

Who leads the program?
Florida Virtual School is governed by a Board of Trustees established by the Florida Legislature and appointed by the Governor of Florida. FLVS employs 75 Florida certified teachers and 40 support staff for a total of 115 full-time employees. Each full-time employee works for the FLVS Board of Trustees on an annual contract. Besides providing the web-based course-delivery platform, Jones Knowledge Inc. also helps FLVS market its course curriculum.

FLVS realized such exponential program enrollment figures demanded a more flexible and scalable organizational model. Therefore, in 2001, FLVS began moving towards an in-state franchise model. Individual districts that wish to

offer courses more specific to their student's needs can start an FLVS franchise by hiring their own teachers and licensing existing FLVS course content free of charge as well as developing new courses using the FLVS design template. The districts inherit the FLVS brand, pay FLVS to train their teachers, and use the Jones Knowledge e-education course delivery platform. Currently there are four Florida school districts, located in urban areas, that have a FLVS franchise in operation.

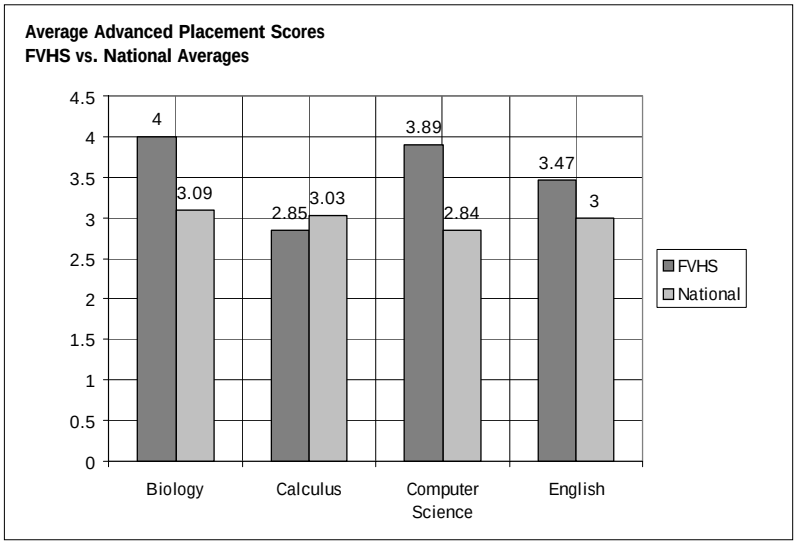
Who teaches the courses, and how are they selected and trained?
The Florida Virtual School instructional staff consists of 75 teachers who live throughout the state. All FLVS teachers possess valid Florida teaching certificates and are certified in the subjects they teach. New teachers are put through a FLVS-designed program to orient them to the best practices of teaching online. Jones Knowledge provides two days of training on how to use the e-education platform.

How is credit awarded?
FLVS is not allowed to grant credit or diplomas directly. A Florida student attending a public high school is awarded credit for a FLVS course through that high school. Home-school students must work with the high schools closest to them to obtain credit for FLVS courses. For students taking AP courses, colleges offer credit or waiver of equivalent courses for successful completion of the national AP exam. All students enrolled in FLVS AP courses must be prepared to take the exam.

How do students access the courses?
FLVS courses are completely web-based and therefore can be accessed whenever or wherever a student has access to a computer with Internet connectivity. Some schools provide computer lab access, permit a student to leave early to work from home, or have students working in the media center. Home-school students are responsible for providing and supporting their own computer and access to the Internet. Students register for and log into FLVS courses at the FLVS website (http://www.flvs.net/).

What technologies are being used and how are they supported?
FLVS course content is provided assuming a user Internet connection of 28.8 Kbps. Schools connected to the state's education network called FIRN (Florida Information Resource Network) have T-1 connections. However, to design courses assuming that bandwidth would leave out home-school students who make up approximately 37 percent of the FLVS student population. Schools connecting via FIRN have access to limited phone-based network support that supplements their in-house technical support services. Due to student bandwidth limitations, course communication is done by phone, email and discussion groups, etc. Advanced networking-based applications such as those developed for Internet2 are not currently being utilized in the FLVS curriculum. Course content is delivered mainly in text form with graphics, streaming media, and Macromedia Flash.

How is the program funded?
A Florida Department of Education grant funded the program when it first started in 1997. Since then, the FLVS program has become a line item in the state budget, although this method of funding is changing. While the FLVS received a $6 million appropriation in 2002-2003, the legislature is very interested in the program evolving into a more self-sustaining entity in the future. FLVS has not divined exactly how to become fiscally self-supporting. One of their plans is to obtain funds from the following sources: licensing of course curriculum, tuition collected from non-Florida public-school students taking FLVS courses, and sharing full-time student money with schools where students are taking FLVS courses. If the FLVS moves to that model, Florida



SAT Scores

	FVHS 2000	Florida 1999	Nation 1999
Math	603	498	505
Verbal	575	499	511
Total	1183	997	1016

home-school students will be required to pay tuition. FLVS is confident that the legislature would be willing to make up any remaining shortfall in budget. Currently, the program expense breakdown is as follows: Approximately 60percent of budgeted expenditures are instructional (instruction and curriculum); 28percent is budgeted for program administration (guidance, staff training, central services and information systems / marketing); the remaining 10percent is spent on administration and plant operations.

How is the program being assessed?
In 2000, state policy makers and the FLVS commissioned the Center for the Study of Teaching and Learning at Florida State University to conduct a comprehensive evaluation of the FLVS and to provide information on the processes and outcomes related to the school. The evaluation focuses on four major components: Curriculum and Instruction, Student Access and Performance, Customer Satisfaction, and Fiscal Resources. Part 10 of the study found that FLVS students far outperformed the state and national averages on the SAT and AP national exams. The full report can be found at http://www.flvs.net/learn_more/evaluation.htm

How is the program marketed?
FLVS marketing happens on a number of levels. Firstly, they have partnered with Jones Knowledge Inc. to market their course curricula to school districts in Florida and other states. Secondly, they continually market their courses to out-of-state rural schools that could benefit from Internet-based classes. A chief marketing officer was hired in mid-October 2001 to work on FLVS branding and develop a comprehensive marketing plan. Since the beginning, teachers and administrators of FLVS have been engaged in an informal lobbying campaign with the legislature, school districts, and individual schools throughout the state.

UTAH
Electronic High School
http://ehs.uen.org

Basic Program Facts:
· students in class: 35 average
· total students in program: 2001: 4500
· home-school students: approx. 450
· teachers: 25 (FT developing courses during summer, PT teaching during school year)
· AP classes: 2
· classes offered: 50
· program administrators: 2
· annual budget: $400,000 covers administrative costs and course development
· future funding source: state legislature
· current funding source: state legislature

Why was the program started?
Utah's Electronic High School (EHS) began in 1994 as an initiative from the State Department of Education, in response to a challenge from Utah Governor Mike Leavitt to provide access to every high-school core course via technology.

Who does the program serve?
The Utah EHS serves four major groups of high school students: 1) Students who have failed a class and need to make up credit 2) Students who wish to take a class not offered at their high school 3) Students who wish to earn extra credit and accelerate graduation and 4) Students who are schooled at home. EHS students come from all 40 Utah public school districts, 50 states, and 14 countries. The vast majority of students are from Utah with a fairly even distribution between rural and urban districts. The number of students taking at least one course every year has grown remarkably from 150 students in 1995 to 4500 students in 2001. About 10 percent are home-school students and less than 1 percent are adult students. These numbers include enrollment in not only Internet-based courses but also the interactive EDNET video courses delivered to each Utah high school.

What does the program offer?
During the 1999-2000 school year EHS offered 12 Internet courses. That number grew to 23 by the 2000-2001 school year. By September 2002, EHS plans to offer a total of 50 courses. There are currently 2 AP courses available. EHS has struggled with scheduling online AP courses so that they finish in time for students to take the national AP course examinations. The bulk of the courses offered online are high-school core courses. The courses are free to Utah public-school students and $100 per course for students outside Utah.

In addition to the Internet courses, all of Utah's 108 high schools offer 168 interactive video courses taught over the over the EDNET network managed by the Utah Education Network. At least one video-conference classroom is available in every high school.
Internet courses are free of charge to Utah public-school students and $100 per course for students outside Utah.
Internet Course listing: http://ehs.uen.org/bin/common/category.pl?type=COURSE
(No course demo available)
EDNET Curriculum Resources: http://www.uen.org/ednet/

Who leads the program?
EHS is part of the State Department of Education and is led by the Principal, Richard Siddoway. Besides serving as EHS Principal, Siddoway also sits in the Utah House of Representatives. His legislative tenure provides him with a unique opportunity to lobby for funds. EHS administration can remain small because of the partnerships it has formed. The Utah Education Network provides Internet access and network technical support for Utah's public schools. EHS now contracts with Blackboard.com to provide the Internet course delivery software platform.

Who teaches the courses, and how are they selected and trained?
There are currently 25 fully accredited

Utah high-school teachers working for EHS. EHS hires existing Utah high-school teachers on a one-year contract. They do online teaching and course development in addition to their full-time teaching positions. They are selected by the Principal of EHS based on their experience, subject mastery, interest, and technology savvy. Teachers are paid $10,000 per course developed over the summer. They are then paid $500 per course they teach during the school year. The Principal of EHS created the curriculum to train the selected teachers on best practices for developing and teaching online courses. The training consists of several hours on course design and how to use Blackboard. Due to the distances involved there is only a yearly faculty meeting where EHS teachers and principal meet. Funds for the training come from the EHS budget.

What is the program's approach to student support services?
To register, students must complete and submit a web form located on the EHS web site. EHS creates a student account and sends the student a username by email. Students can then register for courses on the site. However, students are advised to work closely with their school counselors to be sure the courses are right for them. Adults, home-school, and out-of-state students are advised to go to their nearest high school to meet with a counselor before registering. Students working on an online course at home must provide and maintain their own Internet connections and computers. Students have access to the full suite of information sources available from Pioneer, Utah's online library developed and maintained by the Utah Education Network. Registered EHS students can log into Pioneer with their student ID numbers. The type of resources accessible in Pioneer depends upon the age of the student. All material for the classes is available from the website or through Pioneer.

How are students awarded credit?
EHS does not grant credit or diplomas directly. EHS teachers submit a student course grade to the student's high school. The school then grants the student credit for the EHS course.

What technologies are being used, and how are they supported?
EHS contracts with Blackboard.com to provide the web-based course delivery software platform. Home students having trouble with this software can call Blackboard's 24 hours a day/7 days a week toll-free help desk number. The Utah Education Network (UEN) provides all 108 Utah high schools with the network infrastructure and the technical support required to provide the EHS Internet courses and the two-way video conference courses offered. UEN has trained a teacher in each high school to troubleshoot the video conferencing studio. There are also regional UEN offices around the state staffed with network troubleshooters on call to service the schools and other facilities in their regions.

The UEN is located on the University of Utah campus and is associated with Internet2. Despite the advanced telecommunications infrastructure available to EHS, they are unable to take full advantage of the bandwidth available to enrich course content because of end-user constraints. Many of the home-school students only have access to a 28.8 Kbps dial-up connection to the Internet. UEN and EHS are working together to solve this problem by developing a satellite delivery system in the 30 percent of the rural homes in Utah that have only dial-up Internet options. According to the EHS administration the development of this solution could take two years.

How is the program funded?
Initially, the program operated with federal grants without state funding. In 2001, the state legislature gave EHS $200,000 in initial funding and $200,000 to cover ongoing administrative expenses. The 2002 budget consisted of a $400,000 ongoing line item. This budget covers the salaries of the Principal and his assistant, pays the teachers to develop and teach the courses, and pays Blackboard.com for providing the course delivery platform. Public high-school student enrollment in EHS online courses does not affect their schools' full-time student funding. As long as the student is enrolled at the high school the school receives the entire full-time student funding, regardless of whether the student is enrolled in EHS online courses. The Utah Education Network pays all the connectivity costs associated with delivering the EDNET video conferencing and EHS online courses to the high schools. This partnership allows EHS to operate on its $400,000 budget.

How is the program being assessed?
Before a course is offered, the course is evaluated by the subject-matter specialist at the State Office of Education and, if adjustments are needed, they are made before the course is offered. Following the posting of the course, EHS alerts every teacher in the state who teaches that course in a public-school setting to review the course and send comments. The entire EHS program is assessed and evaluated annually by both the State Board of Education and the legislature (Public Education Standing Committee).

How is the program marketed?
The Utah EHS has not developed a formal plan for marketing services to students and school districts. Because the Principal is also a state legislator, he is in a position to personally lobby for continued state financial support of this virtual education initiative.

CONCORD CONSORTIUM
Virtual High School
http://www.govhs.org/website.nsf

Basic Program Facts:
· students in class: 20
· total students in program: 1700
· home-school students: none
· teachers: 150 - 200
· classes offered: 156
· AP classes: 4
· program administrators: 9 FT
· annual budget: N/A
· current funding source: school membership and teacher training fees.
· future funding source: school membership and teacher training fees.

Why was the program started?
The Concord Consortium, a non-profit tax-emempt education research and development organization, was formed in 1994 by a group of educators to develop innovative ways of using technology in education. In 1997 they received a federal grant for the development of the Virtual High School (VHS). The Virtual High School's purpose is to use technology and the Internet to create a low-cost means of augmenting the range of courses a high school can offer. The first courses were offered in fall 1997.

Who does the program serve?
This program serves students from the high schools that have joined the VHS cooperative and paid yearly membership and teacher training fees to VHS. It does not currently serve home-school students or adults working toward a GED. International schools are invited to participate as long as they pay the yearly membership and teacher training fees.

What does the program offer?
VHS offers students a range of advanced academic courses and innovative core courses, technical courses, and specialized courses for language minority students, all for high-school credit for subjects never before offered in their particular schools. The courses are developed and taught exclusively by high-school teachers from 200 participating high schools from 25 states, based on demand. VHS limits class size to 20 students, and a student may not take more than three courses per semester. Besides core high-school courses, there are quite a few honors courses and currently four AP courses offered. The cooperative approach to developing a virtual high school has led to a steady growth in the number of schools, courses offered, and students participating. In 1997 there were 30 courses offered by teachers from 28 schools to about 340 students. During the 2001 school year, 200 schools offered 156 courses to over 1700 students.
Course DEMO: http://www.govhs.org/Pages/Academics-Explore+a+Class
Student project showcase: http://www.govhs.org/Pages/Campus+Life-Showcase

Who leads the program?
The VHS project started as a cooperative of 43 founding high schools in 13 states managed by the Concord Consortium. In October, 2001 The VHS project was spun off from the Concord Consortium to become an independent non-profit cooperative. In order for a school to participate in the online teaching cooperative it must pay an annual $6000 membership fee and create and teach one course. Each online course a school sponsors and teaches earns that school 20 student seats in both the fall and spring semesters. A school can pay VHS an additional $4000 and create and teach a second course which earns their students an additional 20 places in VHS courses. If a school wishes to join the cooperative but not create a course and provide a teacher, it may do so by paying an $8000 per year membership fee. This only entitles the school to 10 student seats in VHS courses for that year. About 80 percent of the schools participating do provide a teacher and develop a course. Both public and private high schools are involved in this program.

Who teaches the courses, and how are they selected and trained?
Participating high schools provide online teachers for the VHS. Each school in the cooperative agrees to donate at least 20 percent FTE of a single teacher's time to develop and teach one VHS online course. There are no specific teacher certification requirements. The assumption is that teachers employed by the school system will be certified. That does not work for private schools, so there are non-certified teachers on the VHS staff. VHS has developed two graduate-level online professional development courses for teachers. The Teachers Learning Conference (TLC) is a 26-week online course that trains teachers to develop and teach an online course. Netcourse Instructional Methodologies (NIM) is a 15-week course that trains teachers to teach an existing online VHS course. Participating schools must pay for the cost of the training ($3500 each for TLC or NIM)

What is the program's approach to student support services?
Students access the courses through the VHS website. Email is the primary tool for communication between the VHS faculty and the VHS National Office. VHS prefers but does not require students to do their coursework while at school to ensure that they have the necessary computer access and technical support required. However, students can log into VHS courses anywhere and anytime they have Web access. If students work on courses away from school they are responsible for providing the necessary Internet connection and computer hardware. As an absolute minimum, VHS expects students to log in and perform work in their online VHS courses three times per week. Each course should require about 5-7 hours of coursework per week. Students who fail to meet these expectations can be dropped from the course.

Participating schools must provide one

hour per day of release time for their VHS teachers to chat with students, answer course emails, and grade course work. The schools also must agree to allow a student at least 3 hours per week to work on his or her VHS course from school. A VHS site coordinator must also be provided at each participating school. The site coordinator serves as a physical contact for VHS students, providing local technical and administrative support to both VHS teachers and students. The site coordinator also registers students for VHS courses. Site coordinators are trained in an eight-week online Site Coordinators' Orientation, which gives site coordinators the necessary skills and information to assist both teachers and students.

The material for the courses is provided at the course web site. If a student is having trouble a course, he or she can talk to the site coordinator at the school or email the VHS teacher.

How are students awarded credit?
All high schools in the VHS cooperative are accredited, and all have agreed to give student credit for all successfully completed VHS courses. There is a common grading system for all courses in the Virtual High School. Grades range from A+ for excellent work to F for work that does not meet the minimum requirements of the course. Teachers report grades to the student's high school administrative office.

What technologies are being used, and how are they supported?
VHS uses an IBM product called Lotus Notes to design courses and as the course delivery platform. Lotus Notes client software is provided to schools and supported by VHS staff. If instructors have trouble using the software, their first line of defense is the onsite coordinator trained by VHS. If that fails, they fill out a Web-based trouble ticket and submit it to VHS. A phone or email response is guaranteed from VHS within 24 hours. The schools are responsible for providing and supporting computers with a minimum 56 Kbps Internet connection. It is preferable that schools access the Internet through a high-speed connection, such as ISDN or T1-lines, but it is not a requirement for participation. Course content consists mainly of text, low-bandwidth streaming audio and video, images, and Macromedia Flash. There are no Internet2 advanced networking applications being used at this time.

How is the program funded?
VHS, Inc. operates as a non-profit organization that charges tuition for professional development and annual membership fees to all participating schools. Students take courses free of charge. The training fees and the school's annual membership fees provide for central administration, registration, server management, and all the other operational aspects of VHS.

Before VHS switched to its current funding model, it operated on a five-year $7.4 million grant, awarded in 1996 by the Department of Education's Technology Challenge Grant program (each school received $9,000 per year to support a site coordinator position). Each of the founding schools also committed to give $50,000 in matching funds over the life of the grant. In addition, there was corporate sponsorship.

How is the program being assessed?
SRI Inc., a non-profit research group, is responsible for providing program evaluation. The evaluation is designed to help VHS improve and to document the program's impact on those it serves. Semi-annual surveys of all project coordinators, principals, teachers, and a sample of students and longitudinal case studies are the evaluation techniques employed. The program assessment reports can be found at http://www.govhs.org/Content/About+Us-Project+Evaluation .

How is the program marketed?
Starting in January 2002, a full-time position was created to develop and execute a comprehensive marketing plan for VHS. Before this position was created, marketing tasks were shared by everyone on the VHS staff. VHS mainly markets itself at education technology conferences on the vendor floor or by doing panel presentations if possible.

MICHIGAN
Michigan Virtual High School
http://www.mivhs.org

Basic Program Facts:
· students in class: 20
· total students in program: 1,209 (209 regular classes, 1000 AP)
· home-school students: 31
· teachers: 92
· classes offered: 64
· AP classes: 15
· program administrators: 14 FT
· annual budget: $1.5 million from state general fund, in addition to Federal Advanced Placement Incentive funds
· current funding source: state general fund
· future funding source: state and self-sustaining

Why was the program started?
Michigan Virtual High School (MVHS) started as an extension of Michigan Virtual University (MVU). Its goal was to provide high-school students equal access to advanced placement courses, dual enrollment, information technology certification programs, and other technology courses, regardless of the size of their schools or their geographic locations. At the same time, it strives to help schools stretch tight budgets, provide staff development opportunities, and improve student performance.

Who does the program serve?
Currently, MVHS serves Michigan public and non-public-school students, home-school students, students who need to make up credit, and special needs, gifted, and talented students. There are also online professional development courses for Michigan educators.

What does the program offer?
The MVHS currently offers core high-school, Advanced Placement (AP), test-preparation, 90-day credit recovery courses, and professional teacher development courses. Of the core and elective courses offered there are various formats. The self-paced Flex 90 or credit recovery courses offer students the opportunity to earn full credit to meet high-school graduation requirements in an intensive 90-day online course with flexible course-start and assignment-due dates. There are 40 Flex-90 courses available covering all subjects. The 19 traditional semester-long courses have guidelines for due dates, communication, tests, and quizzes.

The curricula for the courses come from various sources. AP and non-AP foreign-language courses are licensed from Apex Learning Inc. and adapted to meet the Michigan Curriculum Framework. Class.com provides the basic content for MVHS Flex 90 courses. These Class.com courses are then repurposed to meet Michigan students' needs. All traditional course curricula are developed by MVU curriculum development teams in partnership with Michigan teachers (a 3-4 month process creates a one-semester course). There is one full-time staff member devoted to managing curriculum development. MVHS is also co-developing or licensing courses that meet its standards from other K-12 school projects, colleges and universities, and private sector providers.

MVHS class sizes do not exceed 20 students. In an agreement with state and schools, full-time students are allowed a maximum of two virtual courses per semester. Until demand changes, instructors only teach one class, so their maximum number of total students is 20.

MVHS is also developing a Virtual Academy that will focus on providing content in the areas of math, science, and information technology. There are also plans to merge the MVHS and MVU to be one Michigan Virtual School (MVS).
Demo Course:
http://ims2.mivu.org/bin/frame.pl?item=courses&m=xbOdXvTRLcatzZgF
1. Choose either Michigan Virtual High School or Michigan Virtual High School Flex 90.
2. Click Preview for course you wish to view.

Who leads the program?
MVHS is a division of Michigan Virtual University, a private, not-for-profit 501(c)(3) Michigan corporation established in 1998 to meet specific workforce development education and training needs of Michigan businesses and industries through the innovative use of electronic learning technologies.

Who teaches the courses, and how are they selected and trained?
MVHS has part-time contracts with certified Michigan high school teachers who are certified in the course subject area and who have received additional training in online instruction from MVHS (http://www.mivhs.com/participation/prodevelopment/). These teachers also work on curriculum development teams. There are currently 70 contracted teachers and an additional 22 in training.

MVHS is working with several educational organizations to develop different models for teachers in Michigan districts to participate as MVHS online instructors. These models may include contractual arrangements that could include a stipend, a bartering system, and other grant-funded possibilities. MVHS is committed to partnering with the education community to find ways to blend this new way of work into educational practice instead of adding more tasks to a teacher's already full roster. One such partnership is with the Michigan Information Technology Network (MITN), a non-profit organization whose mission is to improve access to education through distance education technologies serving the interests of Michigan businesses, schools, and citizens. A Board of Directors comprised of individuals from education, government, and business governs MITN. MITN is a partner of MVU and provides funding for online professional development in addition to the $110 million state Teacher Training Initiative and a $6 million grant from the Bill & Melinda Gates Foundation.

An organization called Click On K-12 (http://www.clickonk12.org) is a growing information resource for Michigan's K-12 educators. It evolved from the Teacher Technology Initiative (TTI), a project that has equipped 90,000 Michigan K-12 teachers with personal computers, software, remote Internet access (dial-up), and Web-based professional development. It is a service of Michigan Virtual University and Michigan Virtual High School.

Issues with the state teacher union regarding pay, assignments, etc. have been the biggest challenges facing the MVHS administration.

What is the program's approach to student support services?
An onsite mentor teacher serves as the liaison between the school, the student, and the online instructor. To comply with Michigan Department of Education Pupil Accounting Guidelines, the enrolling school's administrator must select a certified Michigan teacher to become a student's onsite mentor. This mentor does not have to be certified in the subject area of the virtual course.

Regional Education Media Center (REMC) is a state-funded project providing online education information resources to Michigan students and teachers. MVHS courses use the REMC to supplement student learning resources available on the course website. MVU is considering expanding the virtual library resources currently available.

Not all courses require textbooks, but

schools must provide recommended textbooks from their choice of vendor. MVHS sold books online in its initial semester, but quickly partnered with the University of Michigan's school bookstore to handle any future sales requests from the site.

There is no financial aid for MVHS students. Advanced Placement course fees are paid by federal grants and districts pay for other course fees with their state funds.

MVHS serves as a single provider for all online student support services. Registration and student-safety and technical support are all available online or by a toll-free telephone number.

How are students awarded credit?
MVHS does not offer course credit directly to students. Local and intermediate school districts award credit through their status as public and non-public schools. There is an articulation agreement with state community colleges in development.

What technologies are being used, and how are they supported?
Merit Network, Inc. (http://www.merit.edu) is a non-profit corporation that promotes computer networking in Michigan and beyond. It is Michigan's leading Internet provider to both schools and residential customers. Merit is also a partner of MVU and working on developing Internet2 access and technologies.

MVHS is a virtual campus run on Blackboard program delivery software. MVU provides technical support 24 hours a day/7 days a week through an email address and toll-free telephone number. The primary point of access is the local public school through which the MVHS student is enrolled. MVHS requires minimum standards for a participant's computer: http://www.mivhs.com/aboutus/help/

How is the program funded?
In June of 2000, the state legislature approved funding for the MVHS program through 2003. The funding included $15 million for project start-up funds and an additional $1.5 million for three fiscal years ending in Spring 2003. MVHS is moving toward a self-sustaining membership model in which local schools pay for subscriptions to MVHS services instead of per student fees.

Currently, parents/guardians of home-school students bear the full cost of MVHS courses. Students enrolled in local schools are not responsible for any fees. Their schools pay MVHS $335 per student per semester for each MVHS Traditional and Flex 90 course and $515 per student per semester for each French, German, and Spanish course. The tuition includes a $10 nonrefundable application fee. The local school pays for and provides required textbooks and instructional materials to the students. A student may enroll in up to two MVHS courses per semester at that local high school, if the student also takes at least one class per semester at the school. This allows the school to count the student as at least a part-time student and obtain state aid money for his/her enrollment. The school can then pay for the MVHS tuition and materials using state aid money. The teacher of record on the transcript is the onsite mentor/teacher. Students enrolled in online courses must attend their local schools on state mandated days of instruction.

MVU has a full time fund development staff person who works with other development staff to get funding from foundations and grants for both MVU and MVHS.

How is the program being assessed?
At this stage, the focus of evaluation has been on the teachers to ensure a quality level of online instruction. Teachers are closely monitored and communicated with daily in a virtual teachers' lounge. There is no formal assessment procedure at this time.

Student performance statistics are the responsibility of the individual schools and measurements of the MVHS program are difficult to obtain. According to MVHS, over 80 percent of their online AP students pass the AP tests compared to the national average of just over 50 percent.

How is the program marketed?
A Director of Marketing and Sales has just been hired to create a formal marketing plan and launch the school membership subscription plan.

Although the MVHS program seems to work best in small rural schools (by increasing program offerings), there are many services MVHS could market to the larger suburban schools (test-preparation and credit-recovery courses).

CyberPioneers is the online teacher training program MVHS has used to educate Michigan teachers in the fine art of online course instruction. MVHS has found this training to be an excellent marketing tool, as teachers have become great spokespeople for the program.

Presentations and conferences formally introduced the program to principals, teachers, and parents. While these audiences are in the initial stages of awareness and understanding, there is little resistance to the idea of MVHS. A formal marketing plan will help ensure continued support.

KENTUCKY
Kentucky Virtual High School
http://www.kvhs.org

Basic Program Facts:
· students in class: 25-30 Maximum
· total students in program: 2000/01: 350 2001/02: 750
· home-school students: N/A
· teachers: approx. 25 part-time teachers
· classes offered: 110
· AP classes: 15

· program administrators: 4 FT
· annual budget: $430,000 from state general fund, in addition to Federal AP funding.
· current funding source: school/districts & state general fund
· future funding source: school/districts & state general fund

Why was the program started?
The Kentucky Virtual High School (KVHS) was started in October 1999 to offer students access to advanced courses or electives not taught at local public high schools because of teacher shortages, especially in the foreign languages. It also reduces costs to deliver specific courses to small numbers of students and secures scholarships for deserving students for online AP courses. In addition, it addresses instructional services issues to students with scheduling conflicts, individual learners in unique situations, and non-public-school students.

Who is the program serving?
Currently, KVHS targets all Kentucky public high-school and middle-school students. Kentucky residents who are non-public-school students may be able to enroll through the local public high school. There are also online courses for Kentucky pre-12 educators and building level leadership (including school council members, district consolidated planning coordinators, and principals).

What does the program offer?
The KVHS currently offers high-school, Advanced Placement (AP), and professional development courses. The curriculum comes from many different sources. AP courses are licensed from Apex Learning Inc. Core content courses (required by state code) are licensed from Florida Virtual School (FLVS) and Intelligent Education Inc. (IEI) and then supplemented to meet Kentucky Program of Studies integrity and applicability standards. In addition to the licensing agreements, there are three teachers in the Department of Education's Curriculum Department working on online curriculum development. At this time, KVHS does not offer GED courses, but a new partner program (Virtual Adult Education Center) with the Kentucky Virtual University is being developed and it will offer a GED certificate program.

KVHS class sizes do not exceed 25-30 students, depending upon the course. KVHS courses are based on a classroom model and differ in many ways from the structure of independent study courses. Each class has a single instructor for the duration of the course.
Course Demo: http://www.kvhs.org/Demo40/index.learn

Who leads the program?
The KVHS was developed in collaboration between the Kentucky Department of Education, the Council on Postsecondary Education (a division of the Kentucky Virtual University - KYVU), and the state's major education partners whose common interest is to secure build a world class education system for Kentucky citizens. Originally, the KYVU managed both the virtual high school and the virtual university. Now, the KVHS and the KYVU are close partners with different boards who report to the Kentucky Department of Education.
Who is teaching the courses and how are they selected and trained?

All KVHS instructors hold Kentucky State teaching certificates in their fields of instruction and have part-time teaching contracts with the state Department of Education. Some instructors teach in a regular school and supplement their incomes as KVHS instructors. Many KVHS instructors are retired teachers devoted to the idea of online learning.

KVHS teachers receive special training and education to prepare them for teaching online, and are actively supported throughout the length of the course to ensure that they are successful. A brief summary of each teacher's experience and credentials is posted in the course catalog. KVHS faculty are responsible for maintaining contact with someone at the student's school (and/or a parent) to provide updates on progress and discuss appropriate support and encouragement if a student appears to be falling behind.

What is the program's approach to student support services?
KVHS requires local high schools to provide an onsite school contact for online students. KVHS instructors are available for parent conferences via email or telephone. The Kentucky Virtual Library (KYVL) provides free, unlimited access to library and information resources for all Kentuckians through the Internet. KVHS students are assigned KYVL access rights at the time they register. Registration services are provided by the KVHS site: http://www.kvhs.org/index.real?action=PreRegistration. Because fees are not collected from students, financial aid services are not provided. Some KVHS courses require a textbook. Schools awarding credit are responsible for purchasing the required textbooks and instructional materials. Most of the Apex Learning AP courses also require the student to have access to a FAX machine. It is the goal of KVHS to be the single provider of all student support services that are not the responsibility of local high schools.

How are students awarded credit?
KVHS does not grant credit. Credit is granted and posted by the student's local high school. KVHS students often leap frog to the KYVU courses for college-level instruction. They are then enrolled with the university, not the high school. Students can achieve dual credit by enrolling through the Kentucky Virtual University. The Director of KVHS is currently working on signing articulation agreements with KY State colleges and universities. There has been some hesitation from the universities and KVHS may look to agreements with out-of-state institutions in the future.

What technologies are being used, and how are they supported?
KVHS courses are delivered to public high schools through the Kentucky Education Technology System (http://www.kde.state.ky.us/oet/). There is a state help desk for this state K-12 education network. KVHS is a virtual campus run by eCollege program delivery software. eCollege provides technical support 24 hours a day/7 days a week through an email address and toll-free telephone number. The primary point of access is the local public school, through which the KVHS student is enrolled for at least one class per day. It is possible for students to do all KVHS work on school computers. Student email and teacher email addresses are required for participation, so access at the school is important. While nearly all students do have access to a computer in the home or public library and this provides the student with additional study time, it is only the primary point of access for very few students. The minimum standards for a student's computer require a 28.8 Kbps modem connection to the Internet and a Windows (95 or higher) or a Macintosh (OS 8.1 or higher) system with 32 MB RAM, a soundcard and speakers. A 56K connection and 64 MB RAM is recommended.

While the platform delivery vendor, eCollege, is ready to deliver Internet 2 content and technologies, Kentucky is not ready at the State level. There are goals to incorporate Internet 2 in the KVHS and KYVU in the future.

How is the program funded?
$60,000 was appropriated from the state general fund as start up money for the first 6 months of the program. The program currently receives $430,000 from the state general fund for the annual administrative budget. The greater part of this amount covers the salaries of the four full-time staff. Tuition fees paid by school districts cover the remaining costs of the program. These fees are: $275 per student per half-credit course taken in one semester, $500 per student per one-credit course taken in one semester, $275 per student per one-semester Advanced Placement course, $500 per student per two-semester Advanced Placement course.

Local policy governs the method of payment of tuition. School districts pay KVHS tuition for students enrolled full-time in the local public high school when credit earned from the course is counted toward high school graduation and the school cannot provide the course. The Kentucky School Boards Association policy recommends that the local public school system pay the online course fees for their full-time students. All course fees are paid from the district directly to the Kentucky Virtual High School. The local school's money comes from the state, being paid to the district based on ADA (Average Daily Attendance) figures for students enrolled full-time. The districts receive $6800 per student; $3200 of that amount pays for teaching, not including Advanced Placement course fees. Advanced Placement courses are funded by two federal grants. Kentucky students have been able to enroll without paying fees. As demand increases, the funding will not cover all students enrolled in AP courses. In the future parents may have to bear the cost of AP courses.

How is the program being assessed?
Informally, KVHS has found that the first three weeks of a course are the most important for student retention and performance. The students that remain enrolled tend to cluster at the top end of the grading scale. The primary complaint of students and parents has consistently been that the courses are too hard.

KVHS courses are viewed by the Kentucky Department of Education (KDE), Division of Curriculum Development, for alignment with the Kentucky Core Content and Program of Studies. KVHS instructors make any necessary course modifications. The KDE Division of Curriculum Development consults with KVHS on a continuing basis to ensure that KVHS courses are appropriate and of high quality.

Beyond this course evaluation, there is no formal assessment of the KVHS program. Students and teachers are invited to complete online surveys, but there are no resources to formalize the results. KVHS is looking to partner with regional services to complete assessment routinely.

How is the program marketed?
KVHS is working with a state Education Equity Task Force to ensure that the KVHS effectively markets its offerings to schools in urban areas with large minority populations, less affluent schools in areas such as Appalachia, and schools with high dropout rates and other at-risk student characteristics. Kentucky is not currently focusing heavily on marketing out of state as a funding continuation strategy. Part of the reason is that they have so far focused on development of Kentucky-specific courses and curriculum resources that cannot be obtained through national vendors.

There is no formal marketing plan. KVHS does not have financial or human resources to address its marketing needs. It has requested federal money to create a marketing plan.

NEW MEXICO
New Mexico Virtual School
http://sde.state.nm.us/divisions/learningservices/schoolprogram/nmvs/index.html

Basic Program Facts:
· students in class: 8 Minimum, 15 Maximum
· total students in program: 2000/01: approx. 400, 2001/02: approx. 600
· home-school students: unknown
· teachers: approx. 20 part-time teachers
· classes offered: 57
· AP classes: 10

· program administrators: 3
· annual budget: $800,000 from state general fund, in addition to Federal AP funding
· current funding source: state general fund & Federal AP grants
· future funding source: Federal AP grants & Federal grant

Why was the program started?
The New Mexico Virtual School (NMVS) was started to address the logistical and systemic issues facing New Mexico's education system. Over half of the state's 89 school districts enroll less than 1000 students, and therefore have difficulty offering a full curriculum. Eighty-four percent of public school instructional classrooms are connected to the Internet by individual agreements with local access providers. The challenge facing New Mexico Virtual School is to provide media rich challenging online courses that meet the academic interests of students in small rural schools lacking a unifying state network.

In the design and implementation process, leaders felt it was important that NMVS not become a policy-making or credit granting institution. Instead it was envisioned as an opportunity site for schools, not as a school itself.

Who is the program serving?
Currently, NMVS is primarily serving New Mexico public high school students and dropout students who have re-enrolled in school to finish diploma requirements.

What does the program offer?
The NMVS currently offers high school, and Advanced Placement (AP) courses. The curriculum for the 50-55 core high school level courses is licensed from Intelligent Education Inc. AP courses are licensed from Apex Learning Inc. NMVS found that developing content in-house proved to be too timely and expensive. They are developing partnerships with the State University and other public institutions to create New Mexico specific curricula (like the Chihuahuan Desert Lab & the Navajo Long Walk Seminar). NMVS describes itself as an education opportunity or enhancement, rather than as a school.

Typically students are allowed to take a maximum of two virtual classes per semester. A few exceptions to this state rule have been made for home-school students. Course access is through the State Department of Education's web site where there are links to vendors that provide complete instructional services. (http://sde.state.nm.us/divisions/learningservices/schoolprogram/nmvs/vendors.html)

The State Department of Public Education (SDPE) has plans to increase the audience to all K-12 students as well as offer professional development classes. The SDPE has a vision for an online environment that covers Preschool to Adult Continuing Education. They envision an information architecture to allow different levels of access (public, students, parents, teachers, administrators). Currently, they are strengthening their relationship with the local public broadcasting station to bring in PBS digital content to the virtual school when the station begins to broadcast digitally.
Demo Course: (Apex Learning): http://www.apexlearning.com/offerings/online/online_try.asp
Demo Course: (Intelligent Education): http://www.iei-ec.com/
1. User: Student
2. Password: Student

Who leads the program?
There are three levels of leadership in the NMVS system. The New Mexico State Department of Public Education Department of Curriculum, Instruction and Learning Technologies has ultimate responsibility for the program. This department has contracted with the Southwest Secondary Learning Center (SWSLC), a charter school, to act as fiscal agent and to administer the NMVS. It is the SWSLC that, in addition to the vendors, provides services to the students and schools. Local school districts are in charge of setting policies and choosing the courses that they will offer to their students.

There are currently three full-time staff working at the SWSLC. Scott Glassrood is the director of the SWSLC and also serves as director of the NMVS; his salary is shared between the two institutions. There is a Program Coordinator who is also shared between the two institutions. A secretary is dedicated to the NMVS, but her position will be let go at the end of FY2001/02 to cover budget cuts.

Who teaches the courses, and how are they selected and trained?
KVHS does not offer professional development. The content vendors, Apex Learning Inc, and Intelligent Education Inc., provide all instruction and platform delivery services in addition to the curriculum.

Apex Learning classes have a minimum of 5 students and a maximum of 35 students. They use 35 instructors (6 FT and 29 PT) who reside and are certified in many different states. Full-time instructors have 200-250 students and part-time instructors have 10-199 students. Instructors are very closely monitored and take continuing online training. Apex's 10 AP courses were developed in house by a content development team. Course development is now outsourced to the University of Washington and Powerglide (foreign language courses).

Intelligent Education Inc. (IEI) has part-time contracts with certified instructors to teach their online courses. If a school requests teachers with certification in a specific state, IEI will find teachers with the appropriate credentials. IEI classes have a minimum of 8 students and a maximum of 15 students. Instructors are assigned a maximum of 150 students.

What is the program's approach to student support services?
NMVS requires an affiliation agreement that demands that participating districts provide students with adult supervision and support. Mentors assist students with technical issues, content questions, and textbook distribution, and proctor exams. Additionally, mentors serve as the point of contact for course vendors, district administrators, and parents for student services (attendance, work submission, grade reporting, and teacher of record). The SDPE relies on the course vendors to provide adequate online resources.

The course vendors provide registration services. All courses are free to all enrolled students, therefore financial aid services are not provided. Textbooks are included in the course vendor fees and distributed to districts by the Southwest Secondary Learning Center. The school mentors provide technical support. There is an NMVS technical support staff hired by the SWSLC.

How are students awarded credit?
NMVS does not grant credit. Credit is granted and posted by the student's local high school. The awarding of AP credits is decided by school district agreements with the local community colleges or university. The SDPE is working on a program with the State Department of Higher Education to have automatic concurrent enrollment with State Universities.

What technologies are being used, and how are they supported?
NMVS courses are delivered to public high schools over the Web by individual district agreements with ISPs. Administrative contacts at each school are responsible for providing technical support at this level. Southwest Secondary Learning Center has a technical support staff person available by telephone and email during business hours.

The primary point of access is the local public school, through which the NMVS student is enrolled. Schools and communities are demonstrating innovation with methods of ensuring access to the Internet for virtual students. Time slots for a virtual course are included in the daily student schedule structuring. Also, designated time in the school's computer lab (often a community lab as well) or in a separate community lab is reserved for enrolled students.

Both Apex Learning Inc. (http://www.apexlearning.com/faq/default.asp) and Intelligent Education Inc. (http://www.intelligented.com/common/FAQs/QA.htm) have minimum system requirements for their students.

How is the program funded?
Monies were appropriated from the state general fund to create a virtual school. The budget for the start-up year (2000/01) was $500,000. For the 2001/2002 school year, $800,000 from the state general fund was appropriated. Due to budget cuts and NMVS marketing itself as an opportunity site instead of a school, all funding for the program was cut in the 2002/2003 budget. NMVS does have a $200,000 federal grant in addition to AP funding from the Federal AP Incentive Program, so it will continue to offer AP courses and pre-AP courses in 2002/2003. The fees that NMVS pays vendors are: $385 per class per semester per student for IEI courses, and $475 per class per semester per student for Apex courses.
In New Mexico, all state and federal money goes to the fiscal agent, the Southwest Secondary Learning Center. SWSLC manages the program for the State Department of Public Education. Courses are free to any student in the state and local districts are not required to do any pupil accounting for the NMVS. The SDPE intentionally removed the virtual school from under the State Department of Education as much as possible to avoid bureaucracy.

How is the program being assessed?
While there is no formal evaluation process for the NMVS program as a whole, individual course data is submitted by local schools to a statewide database. Grades, scores, and evaluations from local high schools are reported by the school administration. Data for virtual courses is all submitted under the same course number. Reporting use is limited because individual virtual course data and virtual school data is not separated. There is also a student experience survey on the SDE Web site: http://sde.state.nm.us/divisions/learningservices/schoolprogram/nmvs/student.html.

Initially it was found that a major weakness of the program was the onsite mentoring. There is now a two-day summer retreat for school mentors. A professional development institute and an online course for mentors are being developed. The retention rates also caused concern in the start-up year. The role of the mentor was determined to be of importance in this statistic. This year the drop rate is only 7-10 percent. In the online AP course, 20 percent more students pass than in the onsite classes.

How is the program marketed?
There is no formal marketing plan. During the first year of the program direct mail and presence at conferences were the most effective marketing methods. Teachers and principals support the program because there is no impact on their pupil accounting and they are able to offer more to their students at no cost. Relationships with parents continue to be the responsibility of the local schools. A state senator's child is enrolled in the NMVS and the school has found this to be one of its best avenues of publicity. Although there is a domain reserved for the NMVS (http://www.nmvs.org), it is not in use. The only access is through the SDPE's site.

Alternative Models

The following are examples of virtual education initiatives whose missions and design models are different from the statewide models detailed above.

ALBERTA
LearnAlberta.ca
http://learnalberta.ca

Alberta Learning believes that through leadership and collaboration with stakeholders, it will be able to build a globally recognized lifelong learning community that enables Albertans to be responsible, caring, creative, self-reliant and contributing members of a knowledge-based society. The Online Curriculum Repository (OCR) project was initiated in the summer of 2000 to support this mission. The goal of the OCR project is to support lifelong learning by providing students, parents, teachers and others in the K-12 community with access to learning resources via the LearnAlberta.ca portal. These learning resources will be in the form of multimedia learning objects that directly relate to the Alberta programs of studies and will be made accessible anywhere, anytime via linked databases and portals on the Internet.

The resources offered through the LearnAlberta.ca portal can be used to support teaching and learning in a variety of settings including: in face-to-face classrooms, in virtual or online classroom environments, for home-schooling, for distance learning, to support homework assignments and research projects. Teachers, students and parents can use these digital learning resources to supplement existing resources.

The LearnAlberta.ca portal offers digital resources to all levels of education. For K-12 Education it includes curriculum development, teacher certification, special needs students and funding guidelines; for Apprenticeship & Industry Training there are standards, counseling, funding and certificate guidelines; for Adult Learning there is information on literacy programs, ESL, degree & vocational programs, funding, and financial assistance. Alberta Learning will develop an Online Curriculum Repository Infrastructure of multimedia content in a variety of curriculum areas and grade levels. Initially, learning resources will be developed and licensed for the K-12 educational community and will be available to teachers, parents, and students.
Course Demo: http://www.learnalberta.ca/GuidedTour.asp

Alberta Learning is the provincial government department responsible for the delivery of education programs and services for people of all ages. It works with parents, educators, business, and industry to create opportunities for Albertans to learn throughout their lives http://www.learning.gov.ab.ca/department/about.asp LearnAlberta.ca OCR (Online Curriculum Repository) is a division of Alberta Learning (http://learnalberta.ca/Contacts.asp).

LearnAlberta.ca provides access to an online reference center for teachers, parents and students (http://www.learnalberta.ca/refcentre/login/Login.asp), as well as a learning resource center where instructional materials can be ordered/purchased (http://www.lrc.learning.gov.ab.ca/scripts/cgiip.exe/default.html).

LearnAlberta.ca supports and is developing partnerships with Campus Alberta Repository of Educational Objects (CAREO), Netera Alliance Inc., Broadband Enabled Lifelong Learning (BELLE), Portal for Online Objects in Learning (POOL), and Learn Canada. An example of the potential developments of these partnerships is Video Streaming Alberta (ViStA).
Classrooms in Alberta K-12 schools are one step closer to receiving streamed digital video with the December 18, 2001 launch of the Video Streaming Alberta (ViStA) project. This research and development pilot project is being initiated by Netera Alliance and ACCESS-LTA in conjunction with Alberta Learning and builds upon the information gathered from previous vendor-specific and school jurisdiction-based pilot projects.

The purpose of ViStA is to define and deploy a prototype for the effective delivery of recently licensed and existing digital video to selected publicly funded school jurisdictions in Alberta. The information gathered during the development and deployment of this prototype will determine the short and long-term educational and technical requirements to support video streaming to schools and homes across Alberta. More globally, ViStA will inform future developments of the LearnAlberta.ca portal.

Its Learning Technologies Branch also provides information about various electronic products that will be repurposed for access online through the portal (http://www.learnalberta.ca/ResourcesLTB.asp).

LearnAlberta.ca is funded through the Ministry of Education. The estimated expenses for the Ministry for 2001/02 are CAD 4,806,974 for all program expenses. Support for Basic Learning only is estimated at CAD 3,573,388. This program has created a business plan, but it did not include a marketing strategy. The business plan for 2001/2002-2003/2004 can be found at (http://learnalberta.ca/OverviewBackground.asp).

AUSTRALIA
Virtual Schooling Service
http://education.qld.gov.au/virtualschool/html/index.htm

The province of Queensland has some of the lowest population densities in Australia. The Department of Education in Queensland established a Virtual Schooling Service (VSS) Pilot Project in

2000 with the goal of creating a method to deliver a range of courses not normally available at more remote schools.

The Virtual Schooling Service uses a different model from that of most virtual high schools found in the United States. Students work on the virtual courses while at school. This is not an "anywhere-anytime" model. Students gather in a computer classroom equipped with audio and data conferencing technology at a scheduled time during the school day. All participants are able to hear and contribute to discussions using a conferencing telephone. The data conference enables a virtual whiteboard on a computer screen where participants and teachers can draw, annotate, and present slide shows and copy and paste from other applications. Application sharing is also available that allows the teacher to present information or procedures. Control of the application can also be given to the students. Files can also be transferred to participants during the course of a lesson. There does not appear to be any two-way video involved.

The Virtual Schooling Service is also developing a web-based repository of curriculum resources which students can access during independent work times called The Study Room. The Study Room can store digital media of many forms (documents, digital video, audio, graphics, etc). This content is structured using a scheduler that presents the content as weeks, modules, or units. Within the Study Room, students are able to join discussion groups, annotate resources, and send assignments and project work to teachers. Exams/tests can be scheduled and an online grading facility is available. Students also use their school email accounts to maintain contact with their teachers and to submit course work. Project IT support is done at the school level; however, the schools do have access to the VSS Project Team at AccessEd, the Queensland Department of Education technology unit, to provide support for hardware/software selection, computer configuration, and with networking issues.

The program is aimed at providing courses to secondary students enrolled in state schools. A limited number of more mature students were selected to participate based on their ability to work independently as well as in a group. It is not known how Queensland public school teachers were selected to participate in the program. In 2002 there are eight courses. From the limited information available it was difficult to determine the funding and marketing model and the plan for scaling up this pilot project.

NEW ZEALAND
Te Kete Ipurangi/The Online Learning Center
http://www.tki.org.nz/e/tki/

As an initiative of the New Zealand Ministry of Education, Te Kete Ipurangi (TKI), or The Online Learning Centre, is a bilingual (English and Maori) portal and web community that provides educational material for teachers, school managers, and the education community.

Communities within the site provide resources in a comprehensive list of subjects: governance, health, science, math, helpdesk, language, special education, assessment, integration, etc. Another resource in TKI is Hot Topics, collections of web sites, databases and curriculum activities on topics specifically related to New Zealand and current events.

TKI's vision is to use information and communications technology to provide New Zealand schools with a cost-effective electronic platform to communicate curriculum and administrative materials, enhance teaching and learning, raise student achievement and advance professional development for school management and teaching staff. The Learning Centre Trust is a non-profit organization that develops and manages TKI for the Ministry of Education. A team made up of a site manager, cyber librarian, professional managers, online editors, information coordinators, web developers, designers, and programmers has complete responsibility for the portal and is funded by the Ministry of Education.

New Zealand is also experimenting with Think.com, a free, Web-based environment for primary and secondary students and teachers developed by a division of Oracle Corporation, Oracle Service Industries. The vision of Think.com is that it will be used to facilitate the adoption of technology by schools. Think.com provides an email address and secure password access to an online learning environment that includes text, video, images, and sound. Think.com provides a platform where schools can integrate lessons from any curricular area, including writing assignments, team collaboration, homework assistance, after school programs, etc. Another resource is the Teacher Zone, a community where teachers share ideas and offer guidance to each other on how to use this educational tool. The success of Think.com in New Zealand will depend on the ability of students to access computers and the Internet.

HAWAII
Hawaii E-Charter
http://echarter.k12.hi.us/index.html

Hawaii E-Charter School is a fulltime tuition-free virtual campus offering Hawaii high- school students a complete range of courses toward the completion of a high-school diploma. Hawaii E-Charter combines Internet-based instruction, multimedia technologies, television, and real-time chats in creating standards-based, student-centered learning.
On May 17, 2001, the Hawaii Board of Education unanimously granted Hawaii E-Charter charter-school status. The

school began enrolling students Fall term 2001 and currently has 55 full-time students. They expect to award diplomas to seven students in June 2002. E-Charter hopes to eventually graduate around 200 high school students per year. The school currently offers 38 core and elective courses taught by Hawaii-certified instructors. Teachers are provided with training on how to design courses and teach effectively in the online environment.

All students are required to provide and maintain their own computers and reliable Internet connections. Students log into courses via a software delivery platform provided by WebCT.com.

E-Charter also receives approximately $4000 per student enrolled from the Hawaii Department of Education. The school's funding is augmented by grant monies.

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Appendix D

Listening to the Public: Washington State Community Forums on Online Education

Conducted by the University of Washington

1. Purpose of the Task Force

In January, 2002, Governor Gary Locke appointed a task force of education, business, and government leaders to advise him on the development of statewide virtual education opportunities for students, initially focusing on opportunities for middle and high school students. The goal of the virtual education initiative is to provide all citizens in Washington State with expanded online learning opportunities, resources, and tools - tools that give students access to rich multi-media content, the ability to collaborate with other students around the world, enrichment and AP courses, technology tools for teachers, and the capacity to tailor online resources to meet the needs of individual students and teachers.

2. Purpose of the Community Forums

Task Force members were committed to connecting with Washington communities and seeking to understand what Internet-enabled learning opportunities and distance education choices Washington state residents would like to see developed. In April 2002, representatives of the Task Force conducted a series of one-hour community forums around the state. These community meetings were an opportunity for members of the public to provide their best ideas on the development of these online learning opportunities for middle and high school students. To provide a context for the discussion, each session began with a brief CD-ROM presentation highlighting several online teaching and learning technologies currently available. Members of the public were then invited to provide brief comments, and/or to submit written comments.

3. Schedule of Community Forums

April 12, 2002
Forks - Forks High School
Participants: 25 parents, teachers, students, and school administrators.

April 15, 2002
Seattle - Nova High School and the Islamic School
Participants: 41 students, parents, and teachers. Governor Locke attended.

April 16, 2002
Pasco - Pasco High School
8 teachers, parents, and school administrators.

April 17, 2002
Toppenish Middle School
20 community college students, high school students, parents, and school administrators

April 18, 2002
Omak - Omak High School
7 parents and school administrators.

April 23, 2002
Bellevue - Bellevue High School
25 parents, teachers and school administrators

4. Perspectives Offered by Participating Communities

Forks: Unlike many of the other rural communities the Task Force visited, the majority of the group attending the Forks community forum had already experienced online learning as students, parents of students, teachers, or school administrators. The conversation focused on the many benefits of online learning for rural communities, particularly on how it helps broaden the course offerings and lessen the isolation felt by many rural schools. The community strongly felt any online education initiative should be funded at the state or federal level.

Seattle (Nova High School): The audience for this forum was composed entirely of students, parents, and staff from Nova, an alternative high school in Seattle, and the nearby Islamic School, a private religious school. A thoughtful discussion developed around several themes including concerns about ensuring equality of access to courses; the effectiveness of teaching/learning

in an online learning environment lacking person-to-person interaction; support for students; and concerns about diverting already limited state funds to develop a statewide online learning initiative.

Toppenish and Pasco: Both of these communities shared similar concerns about providing equal access and course opportunities for Hispanic students. Many citizens also felt online courses could help ESL students master English. Both communities expressed a concern about the lack of access to computers with Internet at home and suggested community technology centers be constructed. Thought was given to how computer resources in local schools could be utilized after-hours and on weekends to help provide access. Citizens in Pasco enthusiastically offered to participate in the initial pilot of this effort.

Omak: A small group of school administrators and community leaders attended this forum to discuss how a statewide online learning initiative could help their students to think "beyond the orchards" about future careers. They were also very excited about being able to offer Omak children access to the same courses as Bellevue students; but pointed out that online courses should also resonate with the local interests and needs. There was concern that special needs students be considered when designing a statewide online learning program.

Bellevue: Much of the forum discussion centered on a few parents who shared their experiences shepherding their children through fee-based online courses and the struggle to obtain course credit at the district level. These parents thought it was very important the Task Force develop a streamlined user-friendly approach to course enrollment and credit granting. Bandwidth was also seen as a key issue - if it is in place, then quality content could follow. There was concern that if funding followed the student, various forms of competition might be created. Finally, the group agreed teacher preparation programs must produce teachers who know how to effectively use technology in education.

5. Common Themes

Benefits of online learning

Enables schools to offer more courses and to individualize learning

· While online learning may not be an appropriate solution for every student, it will help small communities and small schools that can't afford to offer a wide variety of core/elective/AP courses. In addition, online learning allows schools to individualize learning and support students in learning at their own pace

Provides choices for non-traditional students

· Not all students learn well in a traditional classroom environment. This initiative offers students with diverse learning styles another way to learn, appealing, for example, to hands-on, visual learners and students who enjoy learning at their own pace and on their own schedule.

· Online learning enables home-schooled and home-bound students to access a broader range of learning opportunities

Increases interaction with other cultures and communities

· The interaction students can have with people in other countries and communities broadens their classroom experience and can augment limited field trip opportunities. Connecting communities through videoconferencing opens minds and motivates students to learn more about each other, breaking down racial and cultural barriers and fostering mutual understanding and respect.

Empowers parents and students

· Parents sometimes feel disconnected from their child's teachers and school. The ability to contact teachers from home via email and check the status of their child's work online would be valuable. A "Washington State Portal" would be an excellent way to give students easy access to their educational records and enable them to build a portfolio of their work.

· When working online, students are often unaware of the age, sex, and race of their classmates - they are generally only concerned with what brings them together as opposed to being distracted or distanced by their differences.

· Students commented that when working in a virtual classroom they function as much like a teacher as like a student. This experience of teaching and learning from their peers significantly increased their learning and engagement in the material.

Challenges

Find a name that communicates

· Be sure to think carefully about the name for this project. "Virtual Education" is hard to understand and the word "virtual" makes it appear to be of a lower quality than "real" education.

Keep this initiative commercial free

· Citizens expressed concern about the commercialization or inappropriate use of marketing in a Washington online education environment and stated strongly that school environments should be commercial-free.

Do not re-invent the wheel

· Many forum attendees were knowledgeable about other virtual education initiatives. They recommended that the task force learn from existing online learning programs around the United States and the world, while taking into account the specific needs of Washington State.

Find a means to build student/teacher relationships and a sense of community

· While online education offers many opportunities, there is the potential for losing the social value of interacting with other students and teachers. Interactions must be more than just words passed on a screen between

students and teachers if we want to develop strong learning relationships in the online environment.
· Attendees felt that not all learning should be done in front of a computer. It is important that online class assignments require students to get out into the real world.
· In a traditional classroom good teachers rely on the face-to-face contact and other body language to gauge student comprehension of lessons. Other techniques must be developed for teachers to assess student understanding in the online learning environment.

Be aware of access challenges which may limit cross-cultural exchange efforts
· If an international exchange is a goal, then how can students communicate with poor countries that don't have the same access these information technologies? Interactions will be limited to developed countries with Internet computers in their classrooms.

Program Design

Establish clear policies for student enrollment
· Enrolling in an online course should be a collaborative decision between parents, children, and teachers. It needs to be made by people who know the potential benefits and drawbacks of a particular student enrolling in an online course.
· There should be a list of pre-requisite skills attached to each online course. If a child meets the qualifications and wants to take the course they should be able to enroll.
· Participation should be decided at the school level, not at the district level.
· Students will need academic counseling to help them make the right choices.
· There should be a limit on the number of online courses students can take.

Provide student support
· It is vital that students have a support person or group at their school to help with any online course problems. There should be a maximum of 35 students assigned to each support person.
· Not all students will be able to decide if online courses are right for them.

Provide technical support
· Several students who had experienced learning online had trouble accessing their course website. Sufficient technical support is needed to make sure the courses are always up and running, regardless of where they access the online courses. Appropriate funds need to be budgeted for this purpose.
· Public access machines are generally not maintained well. If public access terminals are used, resources should be in place to support them.

Involve citizen advisors
· Many attendees expressed appreciation that the Governor is addressing this from the bottom-up, rather than the top-down, and encouraged the task force to maintain that stance throughout.

Set and maintain standards for conducting on-line courses
· Student participants reported problems accessing their Apex instructors in current on-line learning environments. They often had to wait a long time before their teachers answered questions and reported there were not enough "office hours." Also, sometimes teachers did not clearly define assignment due dates and other expectations and didn't confirm assignments had been received. Students emphasized the importance of online teachers setting clear course guidelines so students know what is expected of them. The first twenty days in many traditional classrooms is spent developing the classroom learning community. Considerable thought should be given to build that same sense of community in an online space.

Accommodate special needs populations
· Be sure accommodations are made for students who have special needs, including students who have trouble reading, speak English as a second language, have physical disabilities, etc.

Provide teacher training
· This initiative needs to provide adequate resources to train existing teachers and work with teacher preparation programs to produce new teachers with the skills necessary to teach effectively in the online environment.
· Online courses should be developed to teach existing teachers how to use technology in education more effectively.

Content

Use multiple course formats within content areas
· There should not be a set formula for online curriculum. A range of course structures should be developed (ex: Six different Biology II courses each appealing to different learning styles).

ESL and foreign language courses are a key area of need and opportunity
· There is a need for a range of foreign languages and various Native American languages. This initiative is uniquely capable of making contributions to teaching English as a second-language.

Courses should be developed based on local community needs
· Community group should have input into what courses are developed based on the educational needs of the community. This would provide an opportunity to develop courses that resonate with the local interests and needs (e.g. courses about apples, fish and marine biology, electrical power systems, handling food, driving a tractor safely, dams, etc.).
· Consider creating online courses that prepare students to take standardized tests like the WASL.
· Develop courses that get students thinking about careers. Work with private industry to provide students the opportunity to take virtual tours of Microsoft, Boeing, etc. Leverage these partnerships with private industry to create internships.

· Involve existing online teachers in the course and system design process. They know what really works better than anyone.

Create the best interface design possible

· The Graphical User Interface should be of high quality and easy to use.
· There should be a single portal everyone uses to access courses and resources. WebPages should not be more than 3 clicks deep. Use an "Earthviewer" approach - zoom in on information - streamline the entrance into the information.
· Washington's online education initiative could be a place where tutorials, information, and discussions are organized and centralized. It would not necessarily need to be a "classroom."
· The program should use language that is accessible to all audiences (ESL, parents, students, teachers, etc.).

Access

Maintain the K-20 Network

· Washington State's K-20 network makes it possible to consider expanding on-line learning opportunities. Don't abandon it.

Primary access should be provided at school

· In rural areas of Washington, access to computers with Internet at home is limited. Schools should be the major point of access for students. High school and local college computer labs should be opened after hours and on weekends for students to work on their online courses.

Promote access at public libraries and community centers

· Washington should identify and publicize community technology centers where they exist and create more community technology centers. These facilities provide a place where students can work on their online courses and also help the public become comfortable with technology. Make sure these facilities are open at the right times and that they have adequate technical support infrastructures in place.

Support access at home

· Student access from home is vital. If course access is not made convenient, then student's work will suffer.
· Access gaps need to be addressed - not everyone can afford to have an online computer at home with all the software applications needed for courses. Perhaps Washington should consider creating a scholarship program for students who can't afford access at home.

Funding

Secure adequate funding before launching the project

· A sustainable funding model for this program should be established before it is launched. We don't want to start offering something and find out later the state can't continue to afford it.

Ensure K-12 virtual education is free to all

· Payment should never be the responsibility of the parent or the school because online education in Washington should be an equalizer - otherwise, the existing digital divide will increase. Free and public K-12 education is a must - state or federal taxes should pay for it. If a student wants to take a class for college credit then that student should pay for it.

Money to support this initiative should follow the students

· If a student decides to take a course, a portion of that student's FTE money should be directed to the Washington online education program. But it must be done in a way that does not take too much money away from local schools or create competition for resources.

Seek private sector contributions

· Contributions should be sought from various private sector companies and non-profit organizations to meet the cost of building a solid online education infrastructure because they would benefit from a more prepared and technologically savvy emerging workforce.

Pursue alternative funding options

· There is not enough money in the schools already. An alternative would be to trade curricula for student space in online classes.
· Explore whether the Twenty-First Century Learning Communities grant program might be a model for this initiative.

Timing

The time is now

· Many attendees stressed that now is the time to invest in online education. There are good models, a clear need, and proven benefits.

Supplement classroom courses and provide online courses

· There should be on-line courses as well as tools for use in existing courses. As a starting point, online teaching/learning tools could be developed to supplement existing lessons and resources. Once people are more comfortable using online resources for teaching/learning then the program can expand to start offering courses.

Create a pilot

· Piloting programs in a few areas in the state would be good before launching statewide. Communities that the Task Force visited would be ideal for pilot programs. Be sure the pilot is carried out in communities on both sides of the mountains.

Focus Group Research Findings

Conducted by the University of Washington

Background

Governor Gary Locke created the Washington State Governor's Task Force on Virtual Education to initially advise him on the development of virtual education opportunities for middle and high school students. The goal of the virtual education initiative is to provide all citizens in Washington State with expanded online learning opportunities, resources, and tools - tools that give students access to rich multi-media content, the ability to collaborate with other students around the world, enrichment and AP courses, technology tools for teachers, and the capacity to tailor online resources to meet the needs of individual students and teachers.

To solicit information from the state populace, the Task Force approved a phased market research study to facilitate public discussion and gather information for planning purposes.

Phase I of the study consisted of a set of public forums in six locations across the state where Task Force members and public officials participated in community discussions on the objectives, designs and concerns for virtual education.

Phase II of the study consisted of a set of focus groups conducted in the same six locations as the public forums to elicit in-depth discussions about this concept, student and parent interest, barriers and concerns regarding the design and implementation of virtual education opportunities.

Phase III of the study is a statewide survey of households to determine current virtual or distance education practices and to measure potential demand for virtual public education opportunities.

This report presents the findings from the focus groups representing Phase II of the study. In consideration of Phase II's chosen methodology, the Reader is reminded that intrinsic to the nature of any qualitative study is the delivery of subjective perceptions and utilization methods, and the factors driving these, at the expense of an associative statistical reliability for extrapolation to the marketplace at large. Representation caveats unique to the design of the focus group findings reported here are outlined in the Methodology section of this report.

Methodology

Study Design

University of Washington organized focus groups in six Washington communities: Forks, Pasco, Yakima Valley, Omak/ Nespelum, Seattle, and Bellevue during the period of April 11th - April 23rd, 2002. Wright Focus Research moderated the groups and produced this report with the support of University of Washington Educational Outreach.

Each focus group session consisted of a "pair" of one hour focus groups; a one hour session with the students, followed by a one hour session with their parents. A total of 10 focus group pairs were planned; 2 each in Forks, Pasco, Yakima Valley and Omak/Nespelum, 1 each in Seattle and Bellevue, with the intention of dividing the target audience of students and parents into separate groups of 9th-10th grade students/ parents and 11th-12th grade students/ parents.

To recruit the focus groups, community liaisons of the University of Washington (UW) Office of Educational Partnerships in each of the locations selected a local middle and/or high school to provide the facility and participant pool for each set of groups. From each of the school's chosen, the UW research team selected a representative number of classrooms from which the participant pool would be drawn. The local UW community liaison visited each of the classrooms to deliver invitation letters prepared by the research team and provided an explanation of the research purpose behind the focus group invitations. To confirm participation in a focus group, the invitations directed parents to contact the UW research team via an 800 number, e-mail and/or by returning a completed invitation form to the student's teacher.

All parent/student pairs who agreed to participate were contacted by the research team to confirm their joint attendance at one of the focus group sessions. Participants were informed that refreshments would be provided at the focus group sessions, but no incentives were offered at the time of recruitment. In response to the low participation rate in Forks, UW logo novelty items were dispensed to all students and a random drawing for UW logo t-shirts was held at the close of each of the subsequent focus group sessions. Parents and students were also informed that each student participant would be mailed a certificate acknowledging their participation in a research study for the Washington State Governor's Task Force on Virtual Education.

Focus Group Participation

Recruitment via the method previously outlined met with varying degrees of success among the communities, resulting in a total of fifty (50) students and forty-eight (48) parents participating in a total of fourteen (14) 1-hour focus groups. Community representation in each of the locations is as follows:

Forks - April 11, 2002
4 Students/4 Parents
Two 1-hour Focus Group Sessioins
Grades Represented: 9th grade (1); 11th grade (3)

Pasco - April 16, 2002
Pasco High School
11 Students / 9 Parents
Two 1-hour Focus Group Sessions
Grades Represented: 10th grade (4); 11th grade (2); 12th grade (5)

Yakima Valley - April 17, 2002
Toppenish Middle School
2 Students / 2 Parents
Two 1-hour Focus Group Session
Grades Represented: 7th grade (2)

Omak/Nespalum - April 18, 2002
Omak High School
11 Students / 11 Parents
Four 1-hour Focus Group Sessions
Grades Represented: 9th grade (2) & 10th grade (3); 11th grade (2) & 12th grade (4)

Seattle - April 22, 2002
Nova High School
11 Students / 11 Parents
Two 1-hour Focus Group Session
Grades Represented: 9th grade (1); 10th grade (2); 11th grade (1); 12th grade (5)-NOVA
6th grade (2)-ISLAMIC SCHOOL

Bellevue - April 23, 2002
Bellevue High School
11 Students / 11 Parents
Two 1-hour Focus Group Session
Grades Represented: 9th grade (1); 10th grade (10)

Executive Summary

Current Virtual Education Usage and Satisfaction

All of the students participating in the focus groups cite the Internet as their preferred method for conducting subject-specific research when working on school projects and reports because it is easier and quicker than conventional methods.

Despite some awareness of education and/or research portals, the majority of students rely on search engines when using the Internet for educational purposes. Information technology industry research on Internet usage suggests that this is a common habitual practice among the majority of Internet users.

Virtually all students agree the Internet is faster and easier than traditional resources, such as the library, textbooks or reference books, primarily citing the Internet's advantages in specificity and up-to-date materials.

A lack of current, updated research materials available in their community is a primary driver for Internet usage among Omak students. For these students, the Internet is considered a necessity rather than a preference.

Access concerns are closely tied to location; ranging from the primary concern expressed in Omak to the lack of concern expressed in Bellevue. Internet access bandwidth and the number of PC's available at home tend to correspond with the variance in these concerns.

Washington State Virtual Education Interest and Perceived Benefits

In broad terms, parent and student participants are universal in their support of virtual education for Washington State as a means of access to additional educational benefits.

Students generally want the State to use technology to provide them with the choice and flexibility that the traditionally structured curriculum lacks.

In rural communities, parents frequently express their desire for virtual education to "bridge the gap" between the educational opportunities currently available to their children and the educational opportunities available to children in urban communities.

While there is some variance among parents in the form and content of their interest in virtual education, student perceptions are sharply divided between communities. These divisions are largely based on the level of exposure to various forms of virtual education; since no two communities are utilizing virtual education similarly, each community of students had a unique set of circumstances contributing to their interest and perception of benefits.

Students in rural communities that have some experience with virtual education are generally positive about the potential benefits of virtual education courses, although they are very vocal about the difficulties they've experienced. Students in rural communities who have no experience with virtual education were largely positive about the potential, while noting their uncertainty about actual trial of course offerings.

Students in urban communities that have some exposure to virtual education are largely negative about virtual education courses, per se, but are more positive about the supplemental benefits virtual education could offer within the traditional classroom.

Students in urban communities with no exposure to virtual education are largely negative in their perception of virtual education courses, although they are strongly in favor of virtual education as a support tool in the traditional classroom.

Parents generally want the state to use technology to provide their children with educational opportunities that will allow each child to succeed to his or her potential.

Parents in urban communities look to virtual education to provide their children with access to educational tools that will support their unique interests and learning styles, thereby allowing their children to reach their full academic potential.

Concerns among students in rural communities are more focused on Internet access and access to educational support, rather than their parents' perception that the education they are receiving is negatively impacted by their rural location.

Although students recognize the flexibility and independence associated with virtual courses, it is perceived as negative as often as positive; students often don't trust themselves to be self-motivated.

Notwithstanding their limited representation in the groups, the greater enthusiasm for virtual education courses exhibited by middle school students and their parents suggests that the middle school years may offer the greatest potential for successful introduction of virtual courses to students.

Issues and Concerns with Virtual Education in Washington State

Key issues among parents and students are the intent of the Washington State Virtual Education Initiative, its eventual structure and equal accessibility for students across the state.

Although equal accessibility and structure issues are widely discussed in each of the groups, the foundation for these issues appears to be uncertainty about the intent of virtual education for Washington State.

Parents and students don't want virtual education to replace traditional education practices. This perception was a primary driver within the group discussions, however, parent's were more open to virtual education as an option (rather than a supplement) prior to the group discussions. This shift in perception is likely a result of increased apprehension after viewing the demonstrated tools instead of virtual class instruction.

Many parents are concerned with the sources of funding to support virtual education. The consensus among these parents is that virtual education should not be funded at the expense of traditional education budgets, as this would widen the digital divide between communities of residents.

Due to their largely positive assessment of the educational opportunities currently provided, parents and students in Puget Sound were more likely to suggest that subject support and test taking tools should be the primary focus of virtual education.

Reactions to the Demonstration

The demonstrated uses of technology succeeded in communicating the potential benefits of virtual education in the current classroom environment. Without actual examples of virtual classes, however, parents are generally uncomfortable endorsing a curriculum that appeared largely conceptual.

Parents found the demonstration of current uses of technology for education somewhat difficult to extrapolate to what will be developed for their children. As such, concerns for their child's lack of self-discipline and need for structure focused their reactions.

Students are generally more excited by the demonstration content than their parents, easily applying potential uses within their current curriculum. However, their own assessment of their lack of self-discipline and need for support colored their reactions.

Despite perceived applications, students are still largely in agreement with their parents that the demonstrated uses support the development of tools over actual courses. Key to this perception appears to be the lack of "unique" benefits demonstrated by the majority of the examples, in that they represented a virtual replication of current classroom activities.

Interest in the demonstrated tools is greatest for organization and planning tools; these are perceived to be immediately useful to students and, therefore, valuable as they demonstrate an improvement over current methods.

Desired Content for Washington State Virtual Education

Participants' desired content is somewhat conservative when compared to their initial interest prior to the demonstration. The lack of instruction and support within the demonstration likely contributed to the resulting preference for a conservative application of virtual education.

Virtually all of the participants in the group discussions want virtual education to be based primarily in the traditional classroom environment and supported with access from home and public facilities. Group participants generally believe that virtual education should be woven into the current classroom environment to ensure the quality and accessibility of these educational services.

Most participants feel strongly that any virtual education developed should be accessible by all students, not just the gifted and/or affluent students who currently are perceived as having greater access now.

Parents and students do not want virtual

education to mirror the current curriculum offered in their schools. The general consensus for actual courses seems to be for AP/college, ESL and foreign language, technology and electives currently not offered.

Both parent and student participants support peer review of courses and support tools to ensure the quality and comparability of virtual education across the state.

Parents and students agree that teachers are essential for the success of the vast majority of students and, therefore, should generally be available to support student instruction.

Integration of virtual education into the current classroom environment mitigates fears that teachers may be replaced by virtual education, communities will end up with disparate access and additional costs won't be incurred for student use of "optional" services.

Analysis of Findings Implications on Study Objectives

The following provides an analysis of the findings for each of the primary study objectives, followed by the implications of these findings on the development of valuable education resources and tools for Washington State.

Objective: What is the current level of interest among parents and students for virtual education in Washington State?

Participants exhibit strong interest in the potential for enhanced educational opportunities that could be delivered by virtual education. Key among these opportunities is equal access to quality education for all residents of Washington State. Intrinsic to equal access is the perception that Washington State must develop virtual education without the expectation of financial and structural support from communities, since the inequity of these elements within and between communities is directly linked to the current inequity in the quality of education across Washington State.

Further, once access issues are satisfied, the interest in virtual education is likely to extend to the broad development of courses and educational services that will provide optional, supplemental and unique opportunities to communities. Although the support suggested by participants in the group discussions is limited to the development of supplemental and unique educational opportunities, this limitation is largely a result of concerns about the structure of the virtual classroom. Therefore, if the structure of the virtual classroom addresses these concerns, the potential interest and acceptance of virtual education is largely unrestricted.

Implications: Interest in virtual education appears to be based on two primary drivers, developed from the socio-economic conditions defining urban and rural communities. The desire within rural communities for access to the quality and breadth of educational opportunities provided within urban communities is perceived as needs-based and urgent; due to fears that the gap widens as technology advances and students move through the education system. Urban communities appear to be primarily driven by the desire for competitive advantage rather than equality; however, these communities do recognize the need for equal access across the State. As such, any initial development of virtual education by Washington State that addresses access issues will be favorably received by all communities; thereby firmly establishing positive interest in future development.

Objective: What motivates participation in virtual education?

The primary motivation for participation in virtual education is access to the unique and/or superior. Virtual education that provides courses and/or services that would be otherwise unavailable directly responds to the key driver behind the motivation to participate. Unfortunately, this motivation is significantly mitigated by concerns for structure and support. The use of technology to develop virtual education tools and/or services that are obviously superior to what is currently available directly responds to the key driver behind the motivation to participate, as well. However, the motivation for usage of such a utility is largely unrestrained until the actual usage experience proves unsatisfying.

Lifestyle drivers such as independence, flexibility and customization are recognized as obvious benefits associated with participation in virtual education. However, these benefits do not readily develop into motivations because of the greater detriments associated with these lifestyle drivers. Parents and students alike recognize the self-motivation, structure and discipline required to take advantage of these benefits. These unmitigated concerns far outweigh any potential benefit, effectively destroying any motivational possibility.

Implications: High school students will be reluctant to participate in virtual courses until they perceive the edge or advantage over the traditional classroom offerings currently available to them. In this respect, students are most open to participating in virtual courses not currently covered by their local school curriculum because it presents an otherwise unavailable opportunity. Likewise, students express a great deal of support for online learning tools that can be integrated into their classrooms. However, uncertainty about the quality

of the virtual education learning environment will deter student participation when a comparable course currently exists in their school or results may adversely affect their future college or employment possibilities. These conditions suggest that the development of courses targeted to high school students must be accompanied by usage information and even trials that directly respond to the concerns presented in the groups. Notwithstanding their limited representation in the groups, the greater enthusiasm for virtual education courses exhibited by middle school students and their parents suggests that the middle school years may offer a greater potential for successful introduction of virtual courses of all types for students. Acknowledged as a "bridge" between elementary and high school, middle school appears naturally associated with the introduction of a new learning structure and methods of instruction. Building upon this foundation is the typical eagerness among children to experience these new structure and instruction methods, the absence of the performance pressure associated with high school transcripts for college entrance, and the expectation of all involved that periods of adjustment are inherent to the middle school transition. As such, middle school students are largely free of the concerns impacting high school students and are, therefore, highly motivated to take advantage of the benefits provided by virtual education.

Objective: What are the barriers and concerns that could impact the design and implementation of virtual education in Washington State?

The greatest barrier impacting the design of virtual education in Washington State is the perception that virtual education is a solitary, independent experience. In order for any virtual education program to achieve widespread success in Washington State it's design must address the various concerns that are driven by this perception. Parents' and students' concerns about the lack of support inherent to virtual education, the lack of structure provided in a virtual environment and the lack of human interaction all develop into a barrier against trial for some and limited potential usage for most.

The primary barrier to implementation of virtual education in Washington State is the disparate access to bandwidth and equipment in communities across the State. Successful implementation of virtual education for all of Washington State is critically dependent upon developing the infrastructure that will provide viable access to each member of every community who is interested in participating. If ignored or left to individual communities to solve, the access problem will likely cause any virtual education program developed for Washington State to exacerbate perceptions of the "digital divide," thereby contributing to the problem it intends to overcome.

Implications: Although the fears driving perception barriers are likely to exist in the majority of community members, they are unlikely to exist at the same degree. As such, the dissemination of targeted public information to alleviate the concerns developed from perceived barriers for community members is a necessary first step to successfully introducing virtual education to Washington State. Ideally, the design of the virtual education program for Washington State will incorporate human interaction into the structure of course instruction and support. Based on participants' initial fears, it does not appear that both virtual and physical human interaction are necessary to a successful virtual education program. Rather, consistent and immediate human interaction is necessary to achieve the level of support and structure that will be able to overcome perception barriers.

A response to the inequity in access must be incorporated into the early stages of any virtual education program development. Based on the values expressed by Washington State community members, the ultimate success of Washington State's Virtual Education Initiative is directly correlated to its responsiveness to the inequity of access to quality education within the State. These conditions notwithstanding, current utilization of the limited virtual education services available to students within the State suggests that any delivery of unique courses and/or superior tools will likely result in some measure of success, as they will be perceived as beneficial to a minority of students within any given community. However, successful development of a model virtual education program will address the primary barriers of perception and access.

Key Findings

Parent's Attitudes and Perceptions of Virtual Education

Current Virtual Education Usage and Satisfaction

Parents are well aware of the frequency and purpose of their child's Internet usage, although they are equally unaware of the actual sites that their child is accessing. Surprisingly few parents expressed any concern with their child's exposure while using the Internet. In fact, all of the parents are highly favorable in their estimation of the Internet's usefulness for their child's educational needs.

Parents are not concerned about their children's access, with most feeling that their home PC's and those available during school hours are sufficient for their children's needs. Only a handful state that their home PC's and/or components are outdated or otherwise

insufficient. Those with outdated systems are responsible for moderate interest in public PC access during non-school hours.

Without the Internet, they'd be lost at school - Omak parent

I don't worry too much about her being online, our computer is in the open and I can see what she's looking at, but I don't really have to worry about that - Toppenish parent

Washington State Virtual Education Interest and Perceived Benefits

Parents generally want the State to use technology to provide their children with educational opportunities that will allow each child to succeed to his or her potential.

In rural communities, parents frequently express their desire for virtual education to "bridge the gap" between the educational opportunities currently available to their children and the educational opportunities available to children in urban communities. This "gap" appears to exist in two key areas; quality and seclusion.

Parents in rural communities want virtual education to provide the skilled and gifted teachers that they feel their communities can't attract and/or the educational materials and tools that they consider currently inaccessible to them. Concurrently, these parents feel that virtual education can redress the limited perspective developed from growing up in a rural community by providing their children with a window to the myriad of opportunities that exist outside of those represented in their rural surroundings.

Education is real traditional in small towns. This should expose them to stuff the city kids have - Toppenish parent

Provide a release from the penalty of being in a small town - Omak parent

Parents in urban communities look to virtual education to provide their children with access to educational tools that will support their unique interests and learning styles, thereby allowing their children to reach their full academic potential.

Urban parents tend to feel that the traditional classroom environment is essential to their child's educational experience, but that technology could augment this experience by enriching the learning environment in order to fuel their child's interest. In addition, urban parents see a need for assessment and testing tools that will prepare their children for mandatory statewide testing.

Awesome high school experience will be missed…This shouldn't replace traditional ways of teaching - Bellevue parent

Should offer more (subject) choices and (support) different learning styles…WASL prep - Seattle parent

Interestingly, parents of middle school children are enthusiastic about their child's participation in virtual courses and, in comparison to the parents of high school students, are much less concerned with any potential negative ramifications for their child if she is among the first to "try out" an online course.

Issues and Concerns with Virtual Education in Washington State

Although equal accessibility and structure issues were widely discussed in each of the groups, the foundation for these issues appears to be uncertainty about the intent of virtual education for Washington State. Parents don't want virtual education to replace traditional education and, especially, teachers. Parents suggest that the interaction involved in the classroom is key to education. Across groups, parents stated their belief that the high school experience is an essential part of life.

To a lesser degree, parents talked of the importance of the student-teacher relationship to inspire young adults. As such, parents are hopeful that the structure of virtual education in Washington State will be primarily focused on integration into the traditional classroom environment. In addition, equal access for all students is a primary concern within the majority of the parent groups. The consensus among parents is that virtual education should be accessible to students who don't have a computer available in their homes.

There is no advantage when you just have students in a classroom all "tuning in" to a virtual class at the same time - Bellevue parent

There aren't enough computers for all the students, basic students are currently excluded - Forks parent

Parents feel that, in it's current form, virtual education is unavailable to all but the most exceptional students. Considering the breadth of curriculum that would need to be developed to support ESL, remedial, average and exceptional students, group participants are very concerned about the quality of these educational services; who will train teachers, who will ensure that the quality of virtual education is consistent across the state, how will access be provided to everyone?

In addition, many parents are concerned with where the funding would come from to support virtual education. The consensus among these parents is that virtual education should not be funded at the expense of traditional education budgets. Although parents offer no cogent direction toward an appropriate source of funds for virtual education, they generally don't think they should have to pay more for this access. In fact, parents feel that any such burden on the community will just widen the divide between affluent and impoverished districts and individuals.

The district is already strapped for money, how are they going to provide computers for everyone? - Nova parent

I can tell you right now nobody around here is going to pay for it, and it can't come from district funds because that would only increase the "haves and have nots" - Omak parent

Parent Reaction to Virtual Education Demonstration

During each of the group sessions, participants are shown a demonstration of a variety of educational uses of technology. Each of the demonstrations lasted approximately ten minutes and presented thirteen examples; which were emphasized unevenly depending upon relevance to each group of participants. As such, some examples were briefly viewed while others were presented with a more detailed explanation of their utility.

The thirteen examples are separated and identified within five major areas of functionality; collections, collaboration, communication, clearinghouse and customization to spark discussion about the possible uses within each area of functionality. A discussion of reactions to the examples within each of the five areas follows the summaries of parent and student perceptions provided in this section of the report.

Parents found the demonstration of current uses of technology for education somewhat difficult to extrapolate to what will be developed for their children. The demonstrated uses of technology succeeded in communicating the potential benefits of virtual education in the current classroom environment. Without actual examples of virtual classes, however, parents are generally uncomfortable endorsing a curriculum that appeared largely conceptual.

Although parents in a majority of the groups are informed that virtual class examples are omitted to avoid any limitations on potential development, most felt that the technology shown supported their opinion that technology would be best used to develop supplemental materials and tools for incorporation into the current curriculum.

It's a beginning…(it's) more supplemental in nature - Bellevue Parent

Expected to see example of a virtual class - Omak parent

The demo isn't sufficient. It didn't show what it is really like to be in a virtual classroom - Pasco Parent

COLLECTIONS CONTENT - Earthviewer.com, Center for the Study of the Pacific Northwest, Froguts.com
Earthviewer.com and Froguts.com were both popular among parents. Parents could see the potential of Earthviewer.com as a study aid for history, social studies and geography courses. Froguts.com is largely viewed as an excellent example of how multimedia content could be used to add interest and depth to traditional instruction; however, it is not viewed as a potential replacement for traditional laboratory instruction. Considering that the collections demonstrated in-depth educational support, the inability of parents to view these tools within a virtual classroom environment likely contributed to their assessment that these tools could not be incorporated into a superior replacement for traditional education.

Didn't like the virtual frog demonstration. Should be done with a real frog - Pasco parent

COLLABORATION TOOLS - Video Traces, Catalyst, Virtual Case Tool
The collaboration tools featured during the demonstration offered participants examples of tools incorporating multimedia, e-mail, and message boards that individual students, student groups and/or teachers could use to complete and share course work and planning materials online. These are among the most representative of actual virtual course work, but parents largely ignored these tools during the group discussion. Catalyst presented an example of a central resource for teachers to access lesson plans, study aids, materials as well as collaborate with colleagues, students and parents. Although it was briefly discussed during the demonstration, the potential for use among their children did not appear to register with parents as it was not mentioned during the discussion after the demonstration. Considering their interest in viewing actual virtual course instruction, these tools were likely disappointing in that they provided what parents perceived to be an inferior option to traditional classroom activity due to the omission of any instructor support.

COMMUNICATION TOOLS - Digital Divide Video Conference, E-Post
The digital divide video conference presented an example of communication between a class in Seattle and a class in South Africa. This example was fully presented in each group, which possibly contributed to the positive interest expressed among parents after the demonstration. Moreover, the interest in utilizing technology to provide students with an understanding of the world beyond their community is expressed by many parents prior to the demonstration. As such, Digital Divide demonstrates a unique benefit provided by virtual education that is desired by parents.

I think the interactive video for, like, learning a foreign language is a good example of how we can use technology to add to students' education - Nova parent

CLEARINGHOUSE ACCESS - R1.edu.org: Home page, Participant's page, CourseSearch
Clearinghouse presented examples of

portal access to a wide range of virtual courses offered by a consortium of universities throughout the country. As with the Collaboration tools demonstrated, the potential for use among their children did not appear to register with parents as it was not mentioned during the discussion after the demonstration. These tools did not demonstrate a unique benefit provided by virtual education due to the uncertainty about the actual virtual course that might be offered by these institutions.

CUSTOMIZATION TOOLS - My UW, Portfolio Tool
The customization tool examples allowed participants to view methods of organizing and managing an individual student's curriculum, schedule and course work. Parents were generally impressed with the utility offered by these tools if provided to their children, as the benefits of these tools are easily extrapolated to parents' lifestyles.

I've seen the My UW portal idea before, but students don't use it all because they don't know that it is there - Forks parent

Portfolio is awesome! I wish I had it! - Bellevue parent

Parent's Desired Content for Washington State Virtual Education

Delivery Methods and Access

Virtually all of the participants in the group discussions want virtual education to be based primarily in the traditional classroom environment and supported with access from home and public facilities. Parents are emphatic that teachers are essential for the success of the vast majority of students and, therefore, should generally be available to support student instruction. Although the importance of teachers was noted on the individual questionnaires parents filled out prior to the group, it was not a key issue for the majority of parents. In fact, prior to the group discussion, the greatest concern among parents was the lack of self-discipline among high school students. This shift in priorities appears to be in response to the omission of examples of actual virtual courses. It appears likely that the demonstration of tools without any structure or instruction directed parent's focus to the traditional source of leadership in the classroom; teachers. Support for this conclusion is further demonstrated in the fact that only five parents actually mentioned teachers when writing their individual concerns with the development of virtual education prior to the group discussion.

Most parents feel strongly that any virtual education developed should be accessible by all students, not just the gifted and affluent students who currently have varying degrees of access now. To meet this objective, parents see a need for access throughout their communities. To ensure that all students have equal access, parents assert that primary access should be offered at school so that students without computers at home or those who might have difficulty getting to public facilities are able to take advantage of virtual education services.

Opportunities for everyone in the community above and beyond (high school) - Omak Parent

It should be offered primarily in the classroom, but should be able to access at home - Nova parent

There needs to be libraries, satellite centers, kiosks, extended school hours to ensure access - Bellevue parent

Basic access should be offered in school with access at home, also - Toppenish parent

Course Catalog and Education Services

Parents do not want virtual education to mirror the current curriculum offered in their schools. The general consensus for actual courses seems to be for AP/college, ESL and foreign language, technology and electives currently not offered. However, parents do want to see virtual education supplement the core curriculum to fuel interest among students and provide an opportunity to explore subjects in-depth.

Interestingly, parents were generally positive about the development of a wide range of virtual courses and options for students prior to the group. However, concerns aired during the group discussion and the lack of instruction within the demonstration curbed parents' enthusiasm for any virtual service that would mimic what is currently provided in the traditional classroom environment.

Until proven otherwise, the perception among parents is that virtual education is inferior to traditional education. This suggests that any widespread development of virtual education as a replacement for traditional education will be unlikely to find support among parents. With this foundation, the development of virtual education tools that support the traditional classroom and provide opportunities that are not currently available in the traditional classroom are greatly preferred by parents.

It should offer both advanced and unusual topics, along with classes that help students catch up with credits they missed. Also, ESL backup study and maybe foreign languages. Both of these would need live interaction as well - Seattle parent

School districts should take care of the basics, VEI should take care of the "bonus" - Omak parent

Unique Community/Experience Perspectives:
Parents in Forks are most concerned with preparing their children for the future, whatever that might involve; college, vocational training, entering the workforce, etc. They want the course catalog and education services to augment what is currently offered for their children by offering AP/college courses, vocational training and personal finance/life management.

Pasco and Bellevue parents are very interested in core curriculum support, rather than courses, as the primary focus. If courses are offered, these parents would prefer that courses are limited to AP/college and electives that are not currently offered.

Seattle parents are largely in favor of courses and services that provide their children with flexibility and support for various learning styles and levels, consistent with the methodology of alternative schools.

Toppenish and Omak parents want virtual education to expose their children to the "outside" world as well as deliver courses and services that are not currently available to their children, but are offered in urban school districts.

Integration of Traditional and Virtual Education in Washington State

Group participants generally believe that virtual education should be integrated into the current classroom environment to ensure the quality and accessibility of these educational services. Although parents' individual responses prior to the group discussion indicate a strong desire for alternative methods of learning that would provide success to students who do not thrive in the traditional environment, this interest was largely lost to the issues dominating the group discussions. To ensure the involvement of educators, parents support peer review of courses and support tools to ensure the quality and comparability of virtual education across the state. Integration of virtual education into the current classroom environment also mitigates fears that teachers might be replaced by virtual education, students will end up with disparate access in various communities, and additional costs could be incurred for student use of "optional" services.

Despite the shift in focus among parents that likely tempered their support for broad development of virtual courses, their interest in integration within the current classroom environment is well-supported by parents core concerns for accessibility, their children's self-motivation and quality controls that are evident prior to the group discussion.

The program should start by supplementing what is being offered in the classroom now, not replace it. Students should take no more than 10-15% of courses virtually - Pasco parent

My fear is it will be sitting in a classroom being taught by a teacher online (replacing live teacher) - Bellevue parent

Student's Attitudes and Perceptions of Virtual Education

Current Virtual Education Usage and Satisfaction

All of the students participating in the focus groups currently cite the Internet as their preferred method for conducting subject-specific research when working on school projects and reports. Despite some awareness of education and/or research portals, the majority of students rely on search engines (Google is a frequent mention) when using the Internet for educational purposes. Virtually all students agree the Internet is faster and easier than traditional resources, such as the library, textbooks or reference books.

Access is not a central issue among participating students; all had computers in their homes and at school, with a small minority citing moderate usage of public facilities. Students generally prefer to access the Internet from home due to the nature of their usage and the availability of concurrent activities such as chat, e-mail and downloading. Computers at school are the primary resource of a handful of students, but this usage is necessitated by outdated or overtaxed home computers rather than by choice. In fact, students are largely in agreement that school systems are inferior to those at home due to filtering software.

I haven't been to the library in forever, I use the Internet at home for school - Bellevue student

School is faster, but speed isn't all that importance because we're mostly just accessing text - Omak student

Unique Community/Experience Perspectives:
A lack of current, updated research materials available in their community is a primary driver for Internet usage among Omak students. Not surprisingly, community-wide access concerns are closely tied to location; ranging from the primary concern expressed in Omak to the lack of concern expressed in Bellevue.

Students in Omak and Pasco expressed frustration about the lack of consistent bandwidth performance when accessing the Internet at school. These students report that the school's T1 or T3 bandwidth is shared throughout their district and, therefore, often greatly diminished by high traffic levels. In addition, stable Internet access is an issue among the handful of students in Omak who are taking AP courses. Omak students report that their school's server occasionally goes "down," despite their complete reliance on that Internet access for their AP courses.

Washington State Virtual Education Interest and Perceived Benefits

In broad terms, student participants are universal in their support of virtual education for Washington State. Specifically, students generally want the State to use technology to provide them with the choice and flexibility that the traditionally structured curriculum lacks.

Student perceptions of the form and content of their interest in virtual education, are sharply divided between communities. These divisions are largely based on the level of exposure to various forms of virtual education; since no two communities of students are utilizing virtual education similarly, each community of students has a unique set of circumstances contributing to their interest and perception of benefits.

Concerns among students in rural communities specific to their community had more to do with Internet access and access to educational support than any perception that the education they are receiving is negatively impacted by their rural location. For all students, urban and rural, interest in virtual education is primarily formed by their experience using Internet based tools and/or courses.

Internet is down at the school too often; we need more reliability - Omak student

I wouldn't take a class online…I have a friend who tried it last year and she failed - Pasco student

The cumulative experiences among students indicate a strong, common interest in virtual education tools and support. Students are largely in agreement that such tools would make learning more interesting and provide support on a more individualized basis; remedial to advanced. When discussing their interest in virtual education courses, however, students could articulate the benefits but are largely hesitant about actually taking a virtual course unless it would be otherwise unavailable to them. The consensus among students is that a virtual course experience would be generally inferior to the learning experience provided in the traditional classroom.

Would help with Nova "independent contracts," get ideas for what you might do in a class or independent project - Seattle student

Too risky to take core courses or AP courses virtually. If I failed it would wreck my GPA. A failure like that might affect my college entry chances - Pasco student

Across the group discussions, students readily cited common benefits associated with virtual courses when compared to the traditional class environment. Two unqualified benefits are consistently mentioned; access to a wide range of courses that would otherwise be unavailable and an alternative to scheduling conflicts, capacity and staff limitations that impact the traditional curriculum currently offered to students. Additional benefits such as; independence, flexible scheduling, the ability to work from home or elsewhere, and personalized instruction are qualified by the lack of self-motivation felt by the vast majority of students.

It would be good when we don't have a teacher for a course because their schedules are already full - Omak student

Without a structured schedule it would be hard to prioritize the online/independent class - Nova student

Although students recognize the flexibility and independence associated with virtual courses, this is perceived negatively as often as it is positive; students often don't trust themselves to be self-motivated. Moreover, the potential for a complete absence of face-to-face support is consistently cited as the primary barrier to interest. Interestingly, this concern for a lack of support is as prevalent among students who had no experience with virtual courses as it is among the students who had taken a course online.

I don't like the idea of virtual education. Half the reason I go to school is to socialize. I'd be bored and feel isolated working by myself - Pasco student

It should be in the classroom, at school, with a teacher. There needs to be a human for in-person contact - Bellevue student

A handful of students are very interested in taking courses online without any reservation. These students felt that they are self-motivated and felt that they would be greatly benefited by the ability to concentrate and work more efficiently if they could study from home on a flexible schedule.

Very few middle school students participated in the group discussions, however, these younger students are universally enthusiastic about taking courses online. Although they expressed some concern about the potential lack of physical support available with an online course, this did not undermine their enthusiasm. These younger students also expressed negligible concern over the prospect of signing up for an online course with minimal preparation and/or background information.

You could work at your own pace, whatever, whenever. Skim over things that aren't necessary and just do the interesting stuff - Seattle student

I'd like to do Running Start on the Internet at home, it's more comfortable and I don't have to get ready in the morning like I do for school - Toppenish student

Unique Community/Experience Perspectives:
Forks students are currently taking Virtual High School courses. The overall impression is that these courses are a good experience because they allowed students to take courses that are otherwise unavailable. One student who considered herself to be extremely motivated felt that VHS courses are more expedient and resulted in better grades. In fact, all four participants felt that they would prefer to access VHS from home because they could concentrate better.

However, all of the students agreed that the problems associated with VHS keep it out of reach for the majority of students. The time lag associated with VHS is viewed as a major detriment among students and parents, alike. Apparently, VHS course deadlines and instructor access are set to EST which makes it very difficult for students in Western time zones to get critical questions answered; some students reported waiting a couple of days for an answer. In addition, the inability to know the quality of the instructor prior to taking a course can result in an extremely difficult experience. Secondary concerns include difficulties with the site coordinator, harder coursework than in the traditional classroom and the ability to "cheat" on tests by logging on and off the system to find answers to test questions.

Pasco students are often taking multiple AP courses. Overall, a negative impression is associated with the Apex online courses. Student's issues include the frequency with which the site is down, the "boring" content, difficulty getting questions answered and awareness of others who took a course and failed. Pasco students are among the most resistant to online courses, with the general consensus being that they wouldn't risk their GPA by taking a chance on an online course.

Omak students represented the first class in Omak to take AP courses with Apex. Although they are overwhelmingly pleased to have access to the course, students expressed a great deal of frustration with the problems they are encountering. Among the problems cited are; difficulty contacting the instructor, waiting several days for a response to a question, required access to a fax machine, limited information prior to starting a course (students started a program that is already in progress), unreliable local and/or remote server issues, credit transfer problems, and no local resource with any knowledge of the program and/or subject matter. Omak students agreed that they would have failed the course if they had not worked together to "fill in the pieces" when difficulties arose.

Bellevue students didn't have any experience with online courses, and are largely uninterested in taking courses online. Among the students who would consider an online course, regardless of its structure, electives are considered to be the most viable. Still, students felt that they would be unlikely to take more than one online course at any given time. Overall, parents and students in Bellevue felt that subject support and test taking tools should be the primary focus of virtual education.

Issues and Concerns with Virtual Education in Washington State

Key issues among students is the ability of the Washington State Virtual Education Initiative to truly provide education to every student; what will it's eventual structure be and how can equal accessibility be achieved for students across the state? Interestingly, the foundation for these issues appears to be the student community's experience with virtual education.

For those students who had participated in a virtual course, the presence of a capable teacher is the primary support they feel they need to succeed in their studies. As such, these students are hopeful that the structure of virtual education in Washington State will be primarily focused on integration into the traditional classroom environment.

Our experiences with the Apex course are frustrating; we have a faceless teacher and we have to wait too long for any feedback - Omak student

Students in rural communities and those representing diverse populations are uncertain that enough computers and bandwidth could truly be made available to all the students in their communities. For these students, the infrastructure to support virtual education is a key concern.

Students in Puget Sound have minimal access concerns, but they are largely pleased with the educational opportunities provided to them within their schools. Because of this, virtual education is largely perceived as a support tool to incorporate into the classroom to enrich the learning experience. The perceived lack of need among these students translates into less motivation to participate in a virtual course outside of a classroom.

I don't always "get it", so I need to have the teacher/student interaction to explain things one on one - Bellevue student

I would need to learn better focus before I take a class like that - Nova student

Student Reactions to Virtual Education Techology Demonstration

During each of the group sessions, participants were shown a demonstration of a variety of educational uses of technology. Each of the demonstrations lasted approximately 10 minutes and presented thirteen examples; which were emphasized as appropriate

depending upon relevance to each group of participants. As such, some examples were briefly viewed while others were presented with a more detailed explanation of their utility.

Students are generally more excited by the demonstration content than their parents, easily applying potential uses within their current curriculum. Notwithstanding, they are still largely in agreement with their parents that the demonstrated uses of technology support the development of educational tools over actual courses. Interest in the demonstrated tools is greatest for organization and planning tools; these are perceived to be immediately useful to students and, therefore, valuable.

While parents were somewhat vocal in their disappointment about not having viewed a demonstration of an actual virtual class, students tended to comment positively on those tools that they perceived to be useful and applicable to their studies, while assuming that the lack of teachers and student support demonstrated is indicative of the virtual course environment. As such, students responded similarly to their parents by focusing on the lack of support and shifting their interest in virtual education from broad access to primarily classroom access.

Good to be able to make-up credit or take a credit you need to graduate - Omak student

Most of the stuff is good, but not good enough to take a class online - Bellevue student

COLLECTIONS CONTENT - Earthviewer.com, Center for the Study of the Pacific Northwest, Froguts.com
Earthviewer.com and Froguts.com were both extremely popular among students. Although Earthviewer.com is frequently perceived to be a "cool" novelty site, many students could articulate it's potential as a study aid for history, social studies and geography courses. Froguts.com is largely viewed as an excellent example of how multimedia content can be used to add interest and depth to traditional instruction. However, given the multi-sensory experience provided by laboratory instruction, it is not largely perceived as a viable replacement.

Earthviewer.com is excellent because we really have trouble getting good maps here - Omak student

(Froguts.com) You don't have to kill frogs anymore! - Seattle student

COLLABORATION TOOLS - Video Traces, Catalyst, Virtual Case Tool
Similar to the parent groups, students largely ignored these tools that are among the most representative of actual virtual course work. Although the Catalyst tool was briefly discussed during the demonstration, a couple of students noted that it would be a valuable resource if applied to the virtual education program developed for Washington State. These students noted that teachers would benefit from access to teaching resources that they could incorporate into their lesson plans and students could benefit from access to specific class information.

Public school teachers need Catalyst to learn to teach better - Seattle student

I can see access to the teacher's resource site being valuable…you could easily find out anything you wanted to know about a class anytime - Pasco student

COMMUNICATION TOOLS - Digital Divide Video Conference, E-Post
Digital Divide generated similar enthusiasm among students as it did among parents. However, students appear to be more excited about the potential of this tool for language courses rather than the awareness of other cultures that was of interest to their parents. As such, the potential benefits of international video conference tools are highly likely to be perceived as a unique benefit provided by virtual education.

Language classes would be cool if you could talk to other countries - Omak student

Video conferencing is necessary for international communication - Seattle student

CLEARINGHOUSE ACCESS - R1.edu.org: Home page, Participant's page, CourseSearch
Clearinghouse presented examples of portal access to a wide range of virtual courses offered by a consortium of universities throughout the country. Students are impressed with the quality of the universities involved and the apparent ease with which a specific area of interest could be accessed. Positioned properly, the ability to access a wide array of courses available to students from a reputable provider could potentially generate enthusiasm in virtual courses.

Clearinghouse is a good idea because I want to take college courses for college credit as a high school student - Seattle student

(Participant's page) I liked seeing the universities contributing. I like seeing all the options for classes i could take - Toppenish student

CUSTOMIZATION TOOLS - My UW, Portfolio Tool
The customization tool examples allowed participants to view methods of organizing and managing an individual student's curriculum, schedule and course work. Students are very impressed with the utility offered by these tools, especially the Portfolio tool. The consensus among students is that the Portfolio tool provided a better means for collecting and presenting course work than is currently available. The perception that these tools provide a superior method to what is currently

available within the traditional environment is key to the enthusiasm generated by these tools among students.

I would like the Portfolio tool. Now I have to print everything out and keep it - Omak student

A storage tool like Portfolio is necessary for not losing student work. Papers get lost at Nova - Nova student

Student's Desired Content for Washington State Virtual Education

Students were separated into teams of 2-3 and instructed to develop their "ideal" version of Washington State's virtual education program following each of the student focus group discussions. The following presents a summary of their responses during this exercise.

Delivery Methods and Access

Students' perception of virtual course delivery methods and access was very similar to parents. In fact, students echoed their parents concern about the motivation needed in online courses and their need for assistance from an instructor when they had questions. Students who had experience with virtual courses only reinforced this perception, as their experiences were largely frustrated by the lack of access to an instructor.

Computers should be available to be used in classrooms because at least half of the students don't have access to computers at home. All students should have access to Internet while at school - Pasco student

A classroom where a group of students in the same online course can work together and communicate. A supervisor for your online class that can help you in the classroom (so that you have the interaction) - Omak student

Course Catalog and Education Services

Consistent with their comments following the demonstration, students generally focus on the development of support tools and courses that are currently not provided as part of the traditional education environment. As found within the parent groups, student's uncertainty about the accessibility and quality of instructional support greatly diminished their initial interest in a broad variety of course offerings.

Scholarship information, internship info and opportunities, video-conferencing. Student directory and contact info (available only to students and teachers to avoid online portfolio and information harvesting) - Seattle student

Lots more courses not available in smaller schools. Need to have a teacher there so you can ask simple little questions. Make sure the teachers know what they are doing and give us our grades. More college classes for credit. Lower class Spanish course that would count for 2nd year Spanish - Forks student

Integration of Traditional and Virtual Education in Washington State

Demonstrating a consistent thread of concern among students, integration of virtual and traditional education focuses on the physical presence of an instructor. Although it is possible that demonstration of instruction within a virtual course would have alleviated this concern and generated a different response, the experiences of students who have taken virtual courses suggests that this concern is a well-justified deterrent to the virtual classroom.

Have someone trained that will be at school to have questions answered immediately - Pasco student

I think this is a work in progress and still needs to be worked on. I think that we should incorporate computers in our schools and get the Internet into it also. I just don't think that it should completely take over - Bellevue student

Student Teams Ideal Web Site Design, Content & Functionality

Web Site Design

When asked to define the Web Site design attributes that were most desirable, students were most concerned that virtual education be presented in an easy-to-use, self-explanatory format. Although students do favor the use of color in an appealing presentation, this use is largely limited to its application as an organizational tool that allows students to visually differentiate between topics, resources and other services.

Students generally favor the intelligent use of technology to create an easy-to-use product, but they are less interested in any use of technology that would sacrifice usability; such as time-consuming graphics, heavy animation, etc.

Forks:
Very self-explained
Place to list problems
Not wild sites (bright)
More than school work
Daily puzzles, like word search for extra credit
Simplicity
Informative
Uncluttered
Eye-catchy
Resourceful

Pasco:
Easy to maneuver around.
Research easy to access
More student-oriented
Organized
Colorful
Clear links
Colorful
Big and bold

Toppenish:
Graphics
Video
Backgrounds
Music

Omak:
Easy navigation
Simple
Readable
Good tech support
Constant teacher assistance
Send back corrected homework
Variety of courses offered
Option of hands-on experiments
Easy access
Quick
Interesting
Futuristic
Bright
Attention getting
Interactive site
Connected with other domains

Seattle:
Google
Simple, yet elegant
Non-offensive material
No advertisements
Easy on the eyes
A good URL
Easy to find links
No bright graphics/gaudy colors
Few animations
Content pictures
All pages have same layout
Precise, detailed design
Design for novice & power users
Practical
Skinnable design
The function of "X"

Bellevue:
Friendly
Interactive
Easy to use
Personalized
Teacher biography
Color scheme
Not graphic intense
Graphs
Table of contents
Voice
Only essential info
Colorful/3-D
Links
Pictures
Diagrams
Interesting

Web Site Content

Not surprisingly, students focused heavily on support tools when defining their desired content. Specifically, search and index tools were most frequently mentioned, followed by access to resources and chat tools that would allow students to access help from student communities and/or instructors. Interestingly, no actual course content was listed by any of the student teams. In fact, less than half of the content listed was directly related to virtual courses. Instead, the majority of content listed was support for the traditional classroom environment.

The consistent content focus exhibited across student groups and communities indicates the hesitation to discuss the development of actual courses until their fears about a lack of support within virtual education are alleviated.

Forks:
Spelling Web site
Resource Guide
More information
Fast Downloading
Easy Directions
Resources
Timelines
Message Boards
Real Time Chat Room
"Backflip" site

Pasco:
Help buttons
Search
Postings
Support
Discussion room
Links
Pictures
Tabs

Toppenish:
NA

Omak:
Graphic design
Help Center - FAQ
Maps
Translator
Classes available
Edit content
Check system often
Easy way to submit homework
Private discussion boards
World-wide discussions with other students
High quality
Understanding
Listing of classes
Portfolio keep organized
Bulletin (epost)
Fast paced but understandable
Own search engine
Focused on specific topics
Clearly stated reqs and assignments

Seattle:
Google search
Forum of some art
Chat room to exchange ideas
Area for posted HW
Summaries of each class session
College locator
Info made available
Has sources
Interactive learning
Searchable database
Index
Listing of links
Constantly updated
Rich multimedia experience
References to resources
Inter-student community
Email/student web hosting

Bellevue:
Research
Categorized
Concise info
Web cameras
Chat w/ students and teacher
Chat rooms
Search engine
Links for more detail
Sources
Literary analysis
General homework
Textbook reviews

Diagrams
Video conference
Table of contents
Glossaries
Thesaurus
Step-by-step instructions
Example problems

Web Site Functionality

Students presented a wide range of suggestions when identifying the ideal functionality. Generally, students focused on incorporating ease-of-use, stability and support into the functionality of their ideal virtual education site(s).

Specifically, support was a key concern among students in Forks, Pasco and Omak which, not surprisingly, represent the communities that had experience with virtual education. Ease of use, security and flexible access were the other key functionality issues referenced by these students. Students in Western Washington tended to focus more on the application of technology to ensure uncomplicated, stable, and secure access for students.

Forks:
Easy Links
Background Music
Place to Get Books
Always Have a Teacher to Ask Questions
Simple
Clear & Bold
VHS Exact Set-Up
VHS Library

Pasco:
Lots of info sites
Security
Back-up
Links
Demos

Toppenish:
NA

Omak:
Frames
Print format
User friendly
Multiple explanations
Multiple ways to submit homework
Instructor per 30-50 students
Games (fun labs)
Open 24/7
Options clearly in site
>1 search engine
Help option button
Discussion board to post problems
Connects w/ other schools in the world

Seattle:
Better search
Work for all connections
No dead links
Security
No selling or user's information
Stability
Summary of linked websites
Limited censorship
No broken links
Database driven
Robust platform support
Flexible design per school
User submitted feedback
P2P file sharing

Bellevue:
Learning
Search function
Access to class info
Access to notes
Portfolio
User friendly
Floating Java menu
ASP
Dynamic
Easy to use
Interactive
Pie
Instructions on use
Underline key points
Text pop-ups
Chats/IM
ASP
Refer to each age group

The following data are available upon request:

Parent Participant Pre-Group Questionnaire Responses

Student Participant Current Class Schedules

Student Team Post-Group "Ideal" Washington State Virtual Education Web Site Designs

University of Washington
Educational Outreach

University of Washington
Educational Partnerships &
Learning Technologies

Final Report

Virtual Education Initiative Survey of Washington Parents and Students

Prepared by:

University of Washington
Educational Outreach

University of Washington
Educational Partnerships & Learning Technologies

June 2002

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Executive Summary

The vast majority of Washington's school children are enrolled in public schools and private or parochial schools. Generally, parents approve of curricular offerings in their local districts, but tend to be less familiar with the development and offerings beyond core and required subjects. Sizable shares of parents report that they do not know enough about honors, AP/college-credit, or vocational curricula in their districts to be able to rate district performance in these areas. With the exception of vocational classes, however, the majority of parents describe curricular offerings of their local districts as very good or good.

Despite the support for school districts' curricula, parents who approve of Washington state's plans to develop online education for middle and high school students outnumber the parents who disapprove of this development by over 4 to 1. Parents tend to be looking for additional resources to enhance the quality, flexibility, and/or choices available for their children's public education. These desired enhancements include a catalog of online courses, particularly for courses earning AP/college-credit, honors, or core subject credits, but more often than not covering all types of courses earning curricular credits. Furthermore, the desired enhancements to public education are not limited to the virtual space alone, but extend to other support features such as local mentors, before- and after-school Internet lab access, and a central state board to evaluate and approve online courses that earn credits in every school district.

For their part, Washington's 6^{th}-12^{th} grade students increasingly integrate computing into their own education as they advance grade levels. Nearly all students report access to home computers, but also indicate frequent use of public computing resources during school, in computer labs before- and after- school, and at local libraries. The hours of computer use for schoolwork and education increase from a median of 2 hours per week for middle school students, to 3 hours per week for students in their first two years of high school, and then to 4 hours per week for students in their last two years of high school. Furthermore, an estimated 70,000 students have already become early adopters of online education. Approximately one-in-eight 6^{th}-12^{th} graders report enrolling in online courses in the past year, with over half earning credits from their local schools, school districts, and/or colleges.

Middle school and high school students' interest in online education services is substantial in Washington. Most students are moderately or highly interested in personal web services—that allow students to customize home pages to track courses and save portfolios of their work for colleges or future employers—and catalogs of online courses that earn credits in their local schools. Similar to their parents' sentiments, 6^{th}-12^{th} grade students exhibit the most interest in online courses that earn AP/college-credit, honors, and core subject credits—in a wide range subjects. Although students are most comfortable with email communications with teachers and students in online courses, over half express strong interest in more interactive environments such as high-bandwidth Internet videoconferencing. Locally, students will be looking for support from before- and after-school Internet labs, internships with online and local businesses, and even a dedicated period during school hours for online course-takers.

When presented with the hypothetical situation in which they could substitute onsite school-based classes with online courses, both students and parents demonstrate enthusiasm for the potential of online education. Students estimate they would replace over 50%-60% of their current onsite schedules with online courses. While parents are not quite as enthusiastic, parents nonetheless indicate they would allow their students to replace up to 40% of their local school classes with online courses. Moreover, most parents accept that the state may not be able to fully subsidize the cost of developing online education and express their willingness to cover a portion of the costs on a per course basis.

Background & Methodology

Background

In January, 2002, Governor Gary Locke appointed a task force of education, business, and government leaders to advise him on the development of statewide virtual education opportunities for students, initially focusing on opportunities for middle and high school students. The goal of the virtual education initiative is to provide all citizens in Washington State with expanded online learning opportunities, resources, and tools—tools that give students access to rich multimedia content, the ability to collaborate with other students around the world, enrichment and AP courses, technology tools for teachers, and the capacity to tailor online resources to meet the needs of individual students and teachers.

To solicit information from the state populace, the Task Force initiated three avenues for facilitating public discussion and gathering information for planning purposes. The first avenue of public discussion was a set of public forums at which members of the Task Force, Governor Locke, representatives of the state legislature, and other officials participated in community discussions on the objectives, designs, and concerns for virtual education. The second avenue was a series of regional focus groups that elicited in-depth discussions about the virtual education concept, assessed student and parent interests in virtual education, and probed for barriers that may affect the design and implementation of virtual education opportunities. The third avenue of public participation was a statewide survey of households to determine current virtual or distance education practices and to measure potential demand for virtual public education opportunities. The following report details the findings from the Washington parents and students who participated in the statewide survey on behalf of the Task Force on Virtual Education.

Objectives

The primary objectives of the survey research were:

Current Education Characteristics and Satisfaction with Local Public Education

- Determine parents' satisfaction with local school districts' offerings.
- Assess students' current use of computing and Internet technology in education.
- Measure past enrollment in virtual education courses.

General Appeal of Virtual Education Services among Parents and Students

- Measure interest in key categories of online education services.
- Assess interest in forms of local support for students taking online courses.
- Determine interest in the types of credits that could be earned from online courses.
- Measure preferences for methods of interaction.

Assess Demand for Online Services and Courses via a Virtual Education Web Site

- General approval or disapproval of virtual education concept with parents.
- Prioritize feature sets demanded by students.
- Estimate potential demand for online courses among students.
- Measure potential resistance or limitation on student enrollments by parents.

Methodology

Survey Interviewing

University of Washington Educational Outreach (UWEO) managed the development, administration, and analysis of the survey research. Working with the Governor's Task Force on Virtual Education, UWEO developed a questionnaire to be administered with Washington households over the telephone by a third-party research vendor. For a household to qualify for the study, the householder had to report 1) that they were reached at their primary phone number, 2) that at least one child 18 years old or younger resided most of the time at the householder's residence, and 3) that at least one child was currently pursuing education at the 6th through 12th grade education level. The research vendor was responsible for targeting a random sample of Washington households that met these criteria and administered the questionnaire via telephone to 400 households across the State of Washington. Quotas limited households in the 425, 206, and 253 area codes to 200 interviews to insure representation across the state.

The questionnaire included two sections that obtained information from one parent and one student at the 6th through 12th grade level in each household. The first half of the survey was conducted with one parent from the household. In the event that more than one 6th through 12th grade student resided in the qualified household, a logic routine included in the computer aided telephone interview (CATI) script randomly selected one child to participate. In this manner, the survey aimed to include both a random sample of households and a random sample of students currently studying at the 6th through 12th grade level. Parents responded to a few questions about the randomly selected child. After the parent interview, the second half of the survey was conducted with the only or randomly selected student at the 6th through 12th grade level. The average survey took approximately 15 minutes to complete.

Weighting of Data

Following data collection, UWEO utilized the 2000 Washington State Population Survey published by the Washington State Office of Financial Management to weight parent data by region at the household level. The estimated number of households with children pursuing education at the 6th through 12th grade level is ~413,256 (minor deviations may exist due to rounding errors). This number represents 18.4% of all Washington households. This report treats the responses provided by the participating parent as the opinion of the household, although certainly some differences in opinion may exist within households with multiple parents.

The weighting of household and student data attempted to ensure regional representation. Weighting utilized a definition of state region consistent with the 2000 State Population Survey. In this report, 'Puget Sound' represents the two regions, King County and Other Puget Sound Metro, from the State Population Survey that include King, Kitsap, Pierce, Snohomish, and Thurston counties. 'Greater Washington' represents all other counties in Washington.

UWEO utilized the April 2002 revision of Public and Private School Student Enrollment published by the State of Washington Superintendent of Public Schools to weight student data by region and grade at the person level. The estimated number of students in the 6th through 12th grades in the State of Washington is currently ~586,146 (minor deviations may exist due to rounding errors). The 2000 Washington State Population Survey indicates that approximately 95% of all 12-to-18 year olds attend some form of school.

Other forms of survey error have not been assessed or corrected. This includes non-response biases that may exist due to varying participation rates by qualified households in the quota areas: 206/253/425 (49% response rate) and 503/360 (42% response rate). The population projections are provided solely as preliminary estimates for the purposes of market research and should not be utilized as precise measurements of state residents.

Figure 1

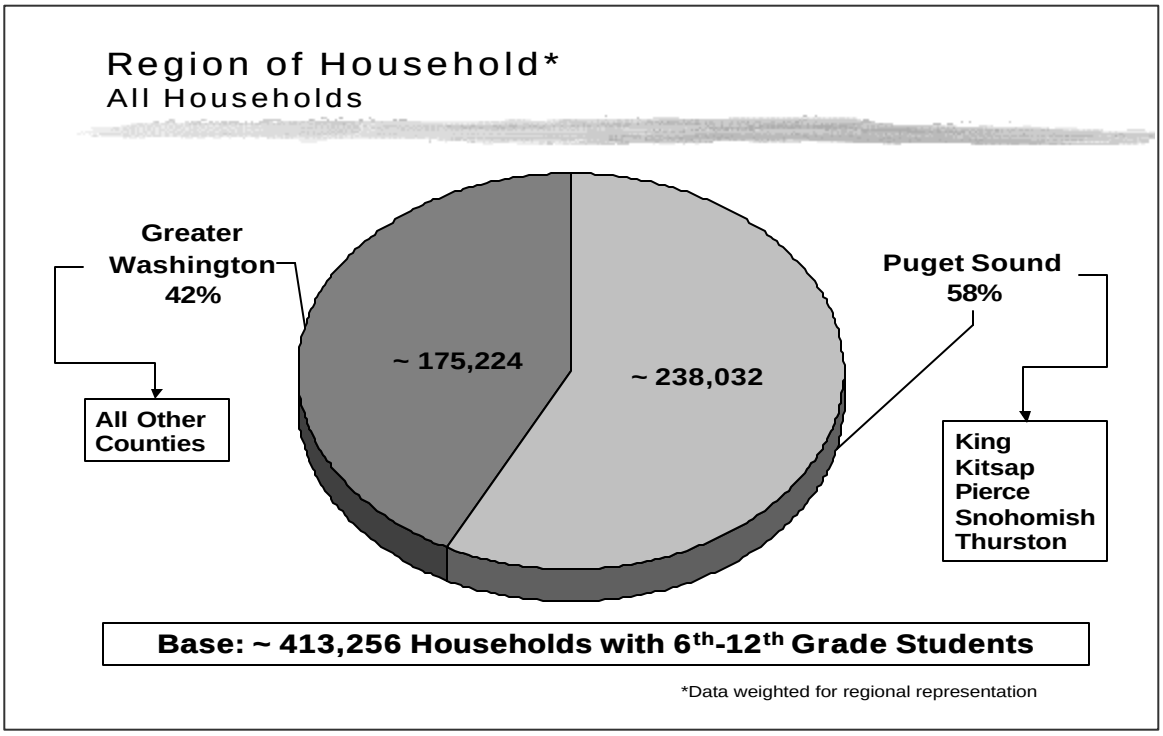
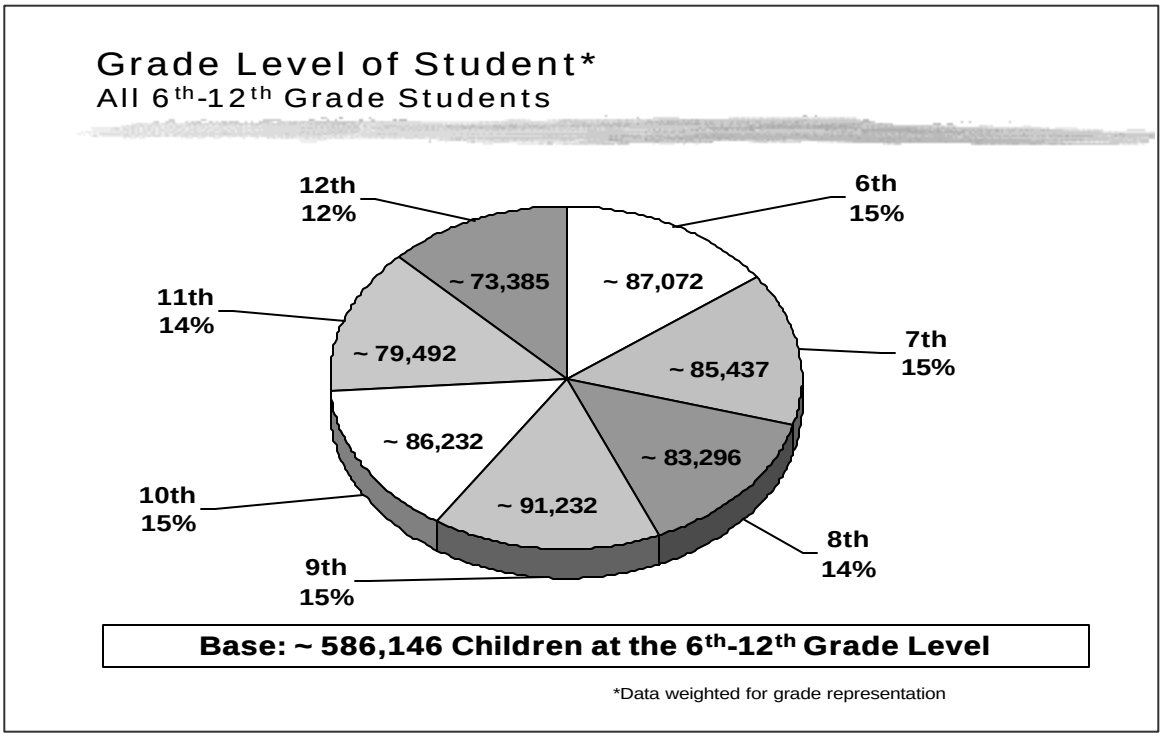


Figure 2

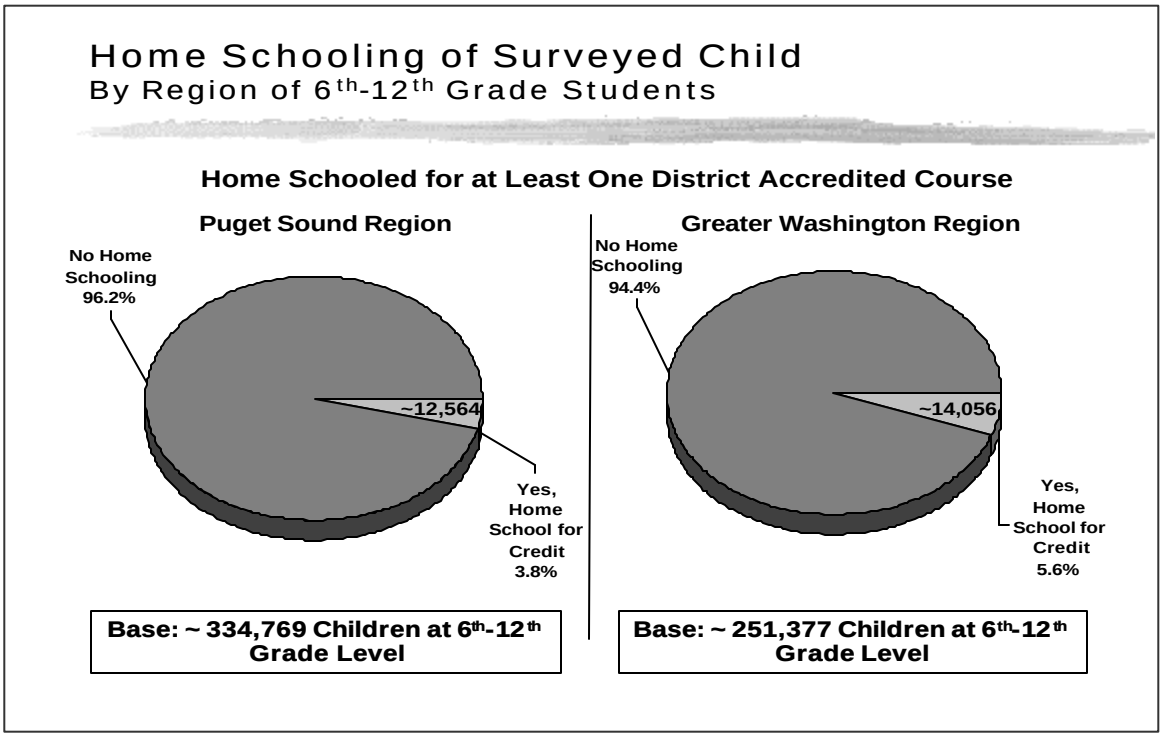


Detailed Findings

Student Education and Parent Satisfaction

In Washington, few 6th-12th grade students are home-schooled by their parents for any of their district-accredited schoolwork. In the Puget Sound region, only 3.8% of 6th-12th grade students are home-schooled for credit, roughly 12,500 students total. Home schooling is slightly more frequent among 6th-12th graders in the Greater Washington region, where 5.6% of students are home-schooled for some of their accredited schoolwork. Although students in Greater Washington are only 43% of all Washington students, they represent 53% of all home-schooled children in the 6th-12th grades.

Figure 3

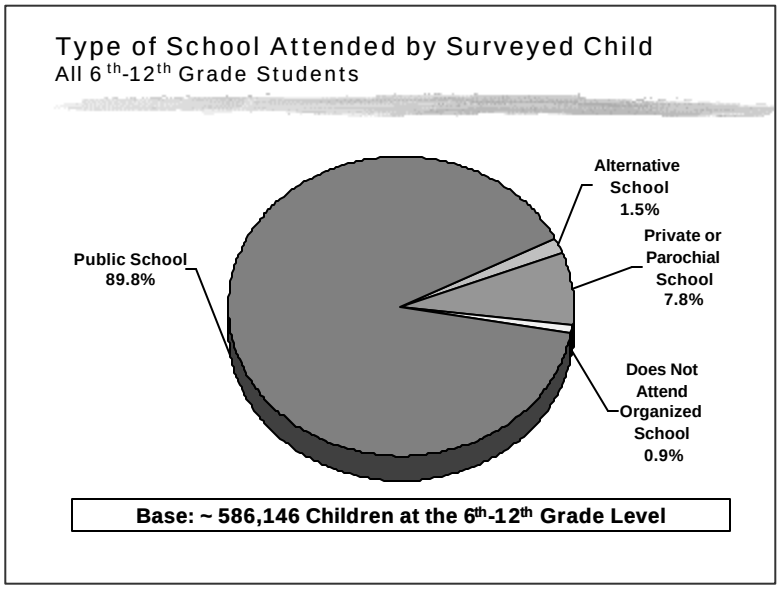


The overwhelming majority of children who are currently pursuing education at the 6th through 12th grade levels are attending public schools (see Figure 4 below). Nine-in-ten, or 89.8%, are attending a public school, while another 1.5% are attending alternative schools. The percentage of children that primarily attend private or parochial schools currently stands at 7.8% of all Washington students. The incidence of children currently at the 6th-12th grade level who do not attend any organized school, or who are entirely home-schooled, is less than 1%—a projection of a little over 5,000 students.

With such a large majority attending public schools, there are only slight differences in student education patterns between the Puget Sound and Greater Washington regions. Students in the metro Puget Sound counties are nearly twice as likely to be attending private or parochial schools

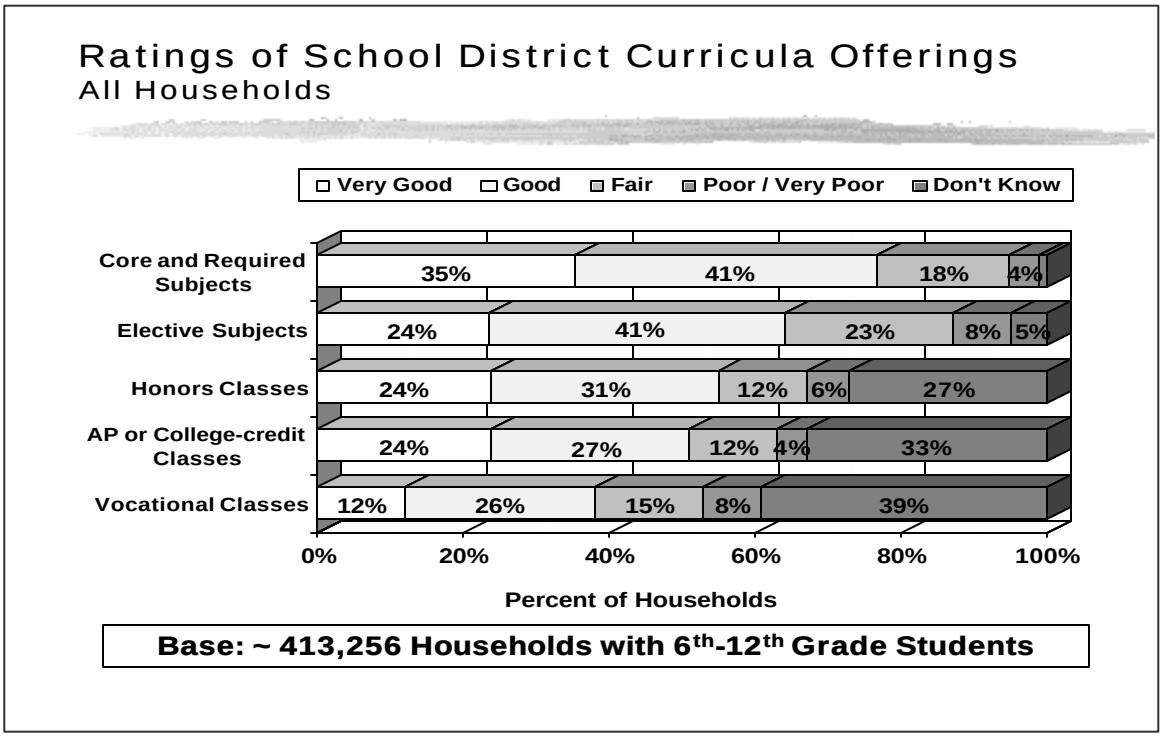
(9.8% v. 5.2%) than students in the counties of Greater Washington (5.2%). Although the incidence is still quite low, students in Greater Washington appear to be nearly three times (1.4% v. .5%) as likely to be entirely home-schooled or in no public and private educational institutions. Overall, however, 88% of Puget Sound students and 92% of Greater Washington students are reportedly attending public schools for some portion of their education.

Figure 4



Generally, Washington households with 6th-12th grade students approve of the subject curricula offered by their local school districts, however, significant numbers are unfamiliar with advanced and vocational opportunities (see Figure 5). Three-in-five households (76%) describe their local school districts core subject offerings as very good or good. A majority of households also rate their school districts' offerings of elective subjects (65%), honors classes (55%), and AP or college course (51%) as very good or good. Only a nominal percent of households rate their local school districts offerings as poor or very poor, although notable portions consider local district curricula offerings as fair. In this respect, households with 6th-12 grade students demonstrate the least satisfaction with elective subject offerings (30%).

Figure 5



Many households were not familiar with their districts' offerings beyond core and elective subjects. Notably, one quarter (24%) of households could not offer any assessment of honors classes offered in their district and one-third (33%) could not assess AP or college-credit class offerings. The level of unfamiliarity with school districts offerings among households with 6th through 12th grade students is most severe for vocational offerings (39%). Furthermore, households' unfamiliarity with district offerings extends to both Puget Sound and Greater Washington residents: honors (27% in both regions), AP or college-credit (36% and 28%, respectively), and vocational (43% and 32%, respectively).

Figure 6

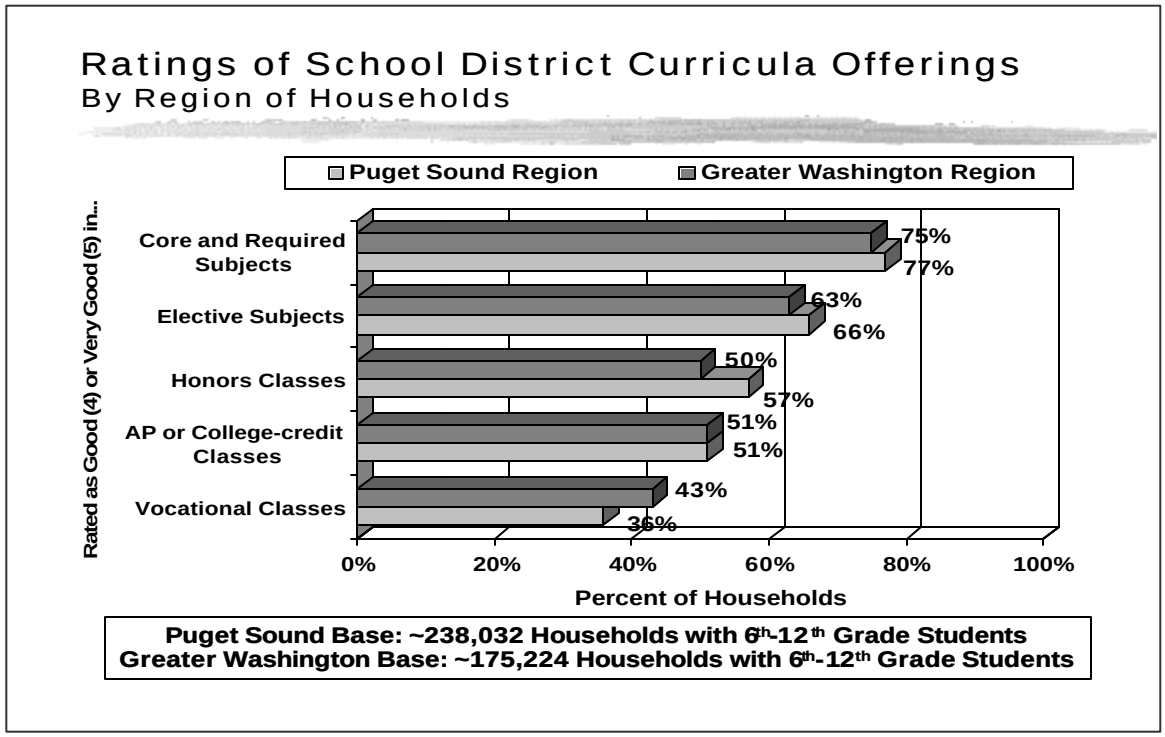


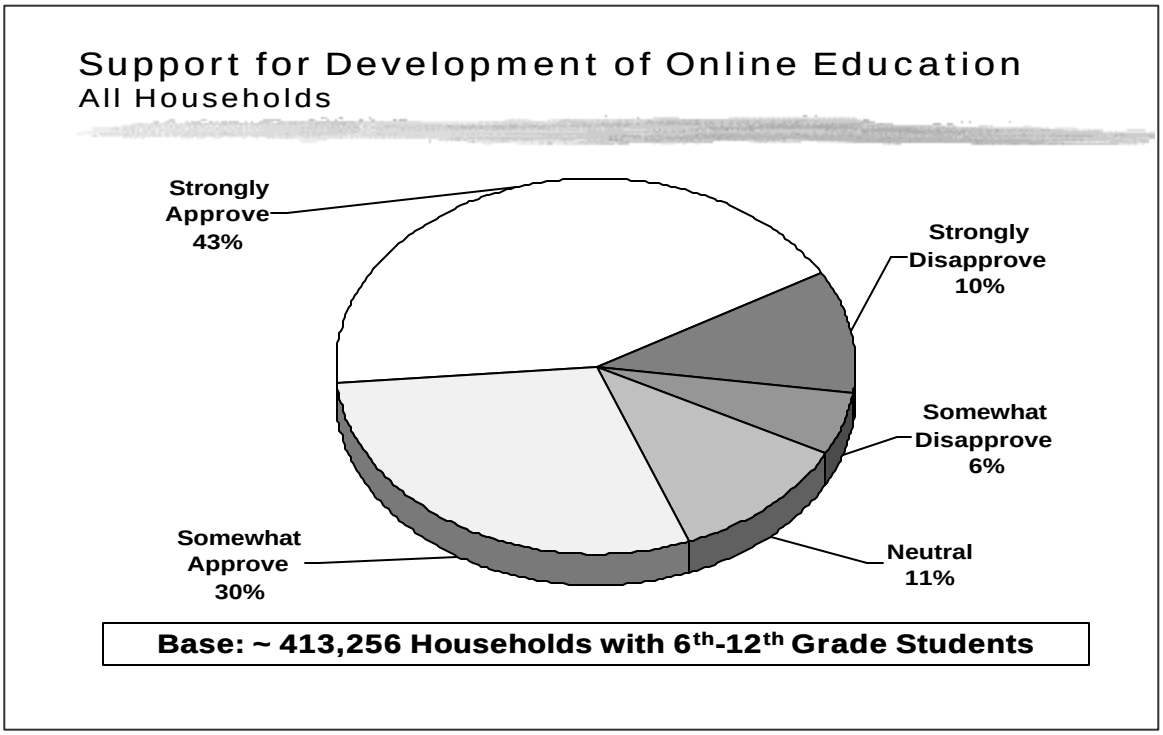
Figure 6 above demonstrates that, like households unfamiliarity with offerings, Puget Sound and Greater Washington households also have fairly comparable assessments of their local school districts' curricula offerings for their children at the 6th through 12th grade levels. In both regions, two-thirds to three-quarters of households describe the core and elective subject offerings available from their local school districts as good or very good. Both regions do not exhibit as positive assessments of honors and AP /college-credit offerings, but again, households tend to be unfamiliar rather than unsatisfied with their districts performance. In fact, vocational curricula are the only offerings for which school districts receive good or very good ratings from less than half of their local residents.

Overall, the vast majority (86%) of households described at least one of the five tested curricula offerings in their local school district as good or very good. Just under half (47%) provided a fair, poor, or very poor rating for any of these five curricula offerings. Essentially, most households with 6th-12th grade students are expressing satisfaction with their local school districts, but point to deficiencies or gaps in the array of offerings from their local districts.

Parents' General Perceptions of Online Education

Although operating with only limited information about the eventual design of online education for Washington's school children, households with 6th-12th grade students most often (43%) expressed strong approval in the concept of online education. In fact, approval (73%) for online education organized by the state government was nearly five times higher than disapproval (16%) among these households. Only one-in-ten (11%) households indicated that they are currently indifferent to the development of online education for middle and high school students by the Washington state government.

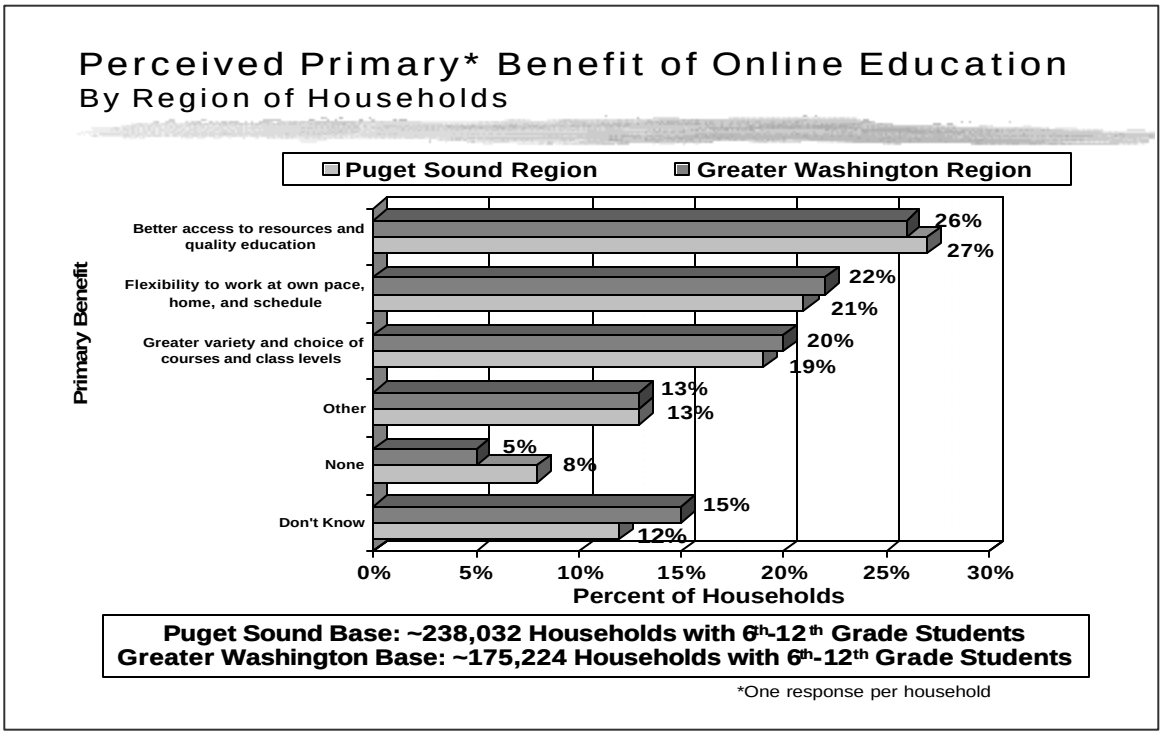
Figure 7



There is very little difference between households with 6th-12th grade students in the Puget Sound and Greater Washington regions. In the metro Puget Sound region, forty-four percent (43%) strongly approve and twenty-eight (28%) somewhat approve of the government's development of online education at the middle school and high school level. In the Greater Washington region, households also strongly approve (42%) or somewhat approve (28%) of this direction in education. Under one-in-five (19%) Puget Sound households with 6th-12th grade students and under one-in-seven (13%) Greater Washington households disapprove of the state government's development of online education.

As well, little difference exists between households differentiated by the ratings of curricula offerings in their local school districts. Of those who rated at last one aspect of their school district as fair or worse, three-quarters (74%) indicate approval for the online education concept. Among those who rated all aspects of their district as good or very good, seven-in-ten (71%) approve of online education for middle and high school students. Few (15%) who are dissatisfied with their local school districts wish to keep public education off the Internet. And, few (15%) who are satisfied with their local district want to maintain a "no-Internet" public education system.

Figure 8

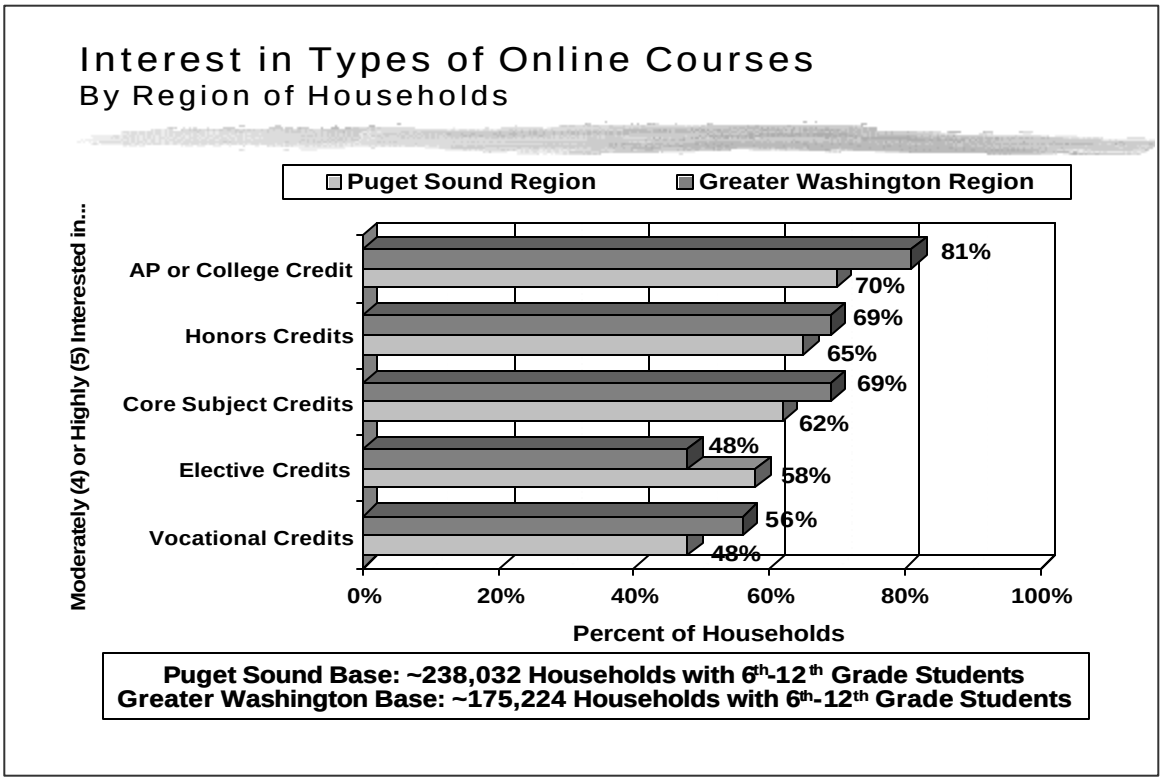


The strong ratings for both local school districts and online education opportunities are perhaps reconciled by the benefits that both Puget Sound and Greater Washington households perceive in the development of online education for middle and high school students: quality, customization, and variety. The majority of households express one of three generalized attitudes about the most significant benefit that online education could bring to their local school district. Approximately one quarter of households in Puget Sound (27%) and Greater Washington (26%) consider increased access to educational resources and quality of education to be the primary benefit of online education. One-fifth of Washington households in both regions (21% and 22%, respectively) indicate that the greater flexibility afforded to students to work at their own pace, at home, and/or on their own schedule is the primary benefit of online education opportunities. Lastly, one-in-five Puget Sound (19%) and Greater Washington (20%) households perceive a greater variety and choice of courses ensuing from the development of online education for middle school and high school students.

Typically, in both Puget Sound and Greater Washington, parents' interests in online educational opportunities most frequently extend to advanced courses (see Figure 9 below). Specifically, in Greater Washington, four-in-five (81%) households with children in the 6th through 12th grades are moderately or highly interested in online courses that earn AP or college credits. Seven-in-ten households in this region are also moderately-to-highly interested in online courses earning honors (69%) and core subject (69%) credits. Around half of these households in Greater Washington are as interested in vocational (56%) and elective (48%) credit courses as well.

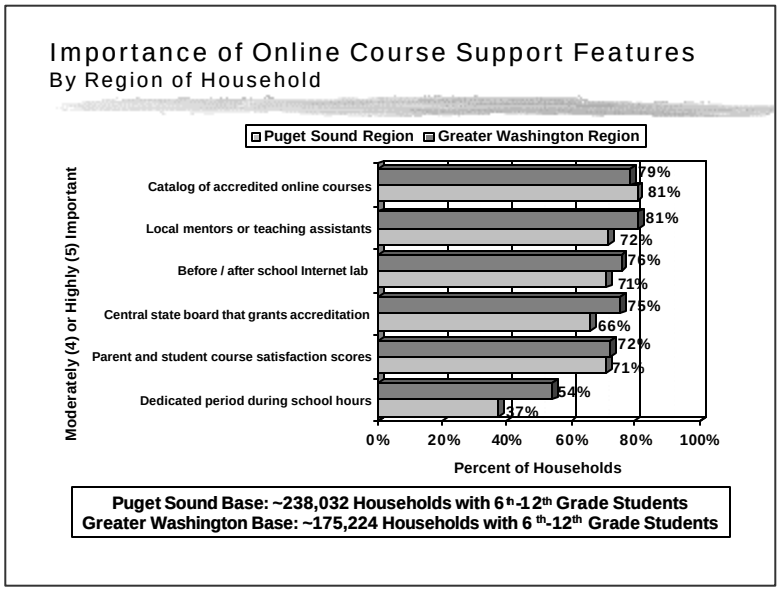
Households in metro Puget Sound are only slightly less enthusiastic as Greater Washington residents. Seven-in-ten (70%) Puget Sound households with 6th-12th grade students indicate moderate-to-high interest in courses earning AP or college credit. Just over three-in-five households in the Puget Sound region express moderate-to-high interest in honors (65%) and core subject (62%) courses. Fifty-eight percent (58%) are moderately-or-highly interested in online courses that earn elective credits, while just less than half (48%) express interest in vocational credits.

Figure 9



As with many aspects of online education explored in this study, households in Puget Sound and households in Greater Washington demonstrate very common interests in the types of local support tools and online services that they would like to see introduced with any online education opportunities (81% and 79%, respectively) developed for Washington's school children. Four-in-five households in both regions consider a 'catalog of online course that earn credits in every Washington school district' as moderately or highly important. Metro Puget Sound and Greater Washington residents placed similarly high levels of importance in most of the other measures as well: 'Local mentors or teaching assistants for students taking online courses' (72% and 81%), 'school Internet lab open before and after regular school hours' (71% and 76%), 'central state board that grants accreditation to online courses' (66% and 75%), and 'student and parent satisfaction scores for online courses' (71% and 72%). In one exception, Greater Washington residents (54%) place considerably more importance in 'dedicated period or class-time during school hours for students taking online courses' than Puget Sound residents (37%).

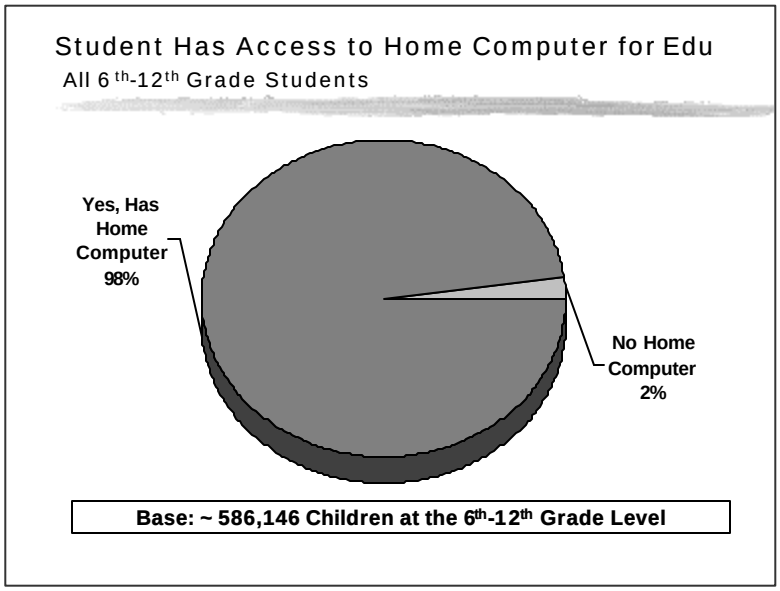
Figure 10



Students' Computer and Online Education Experience

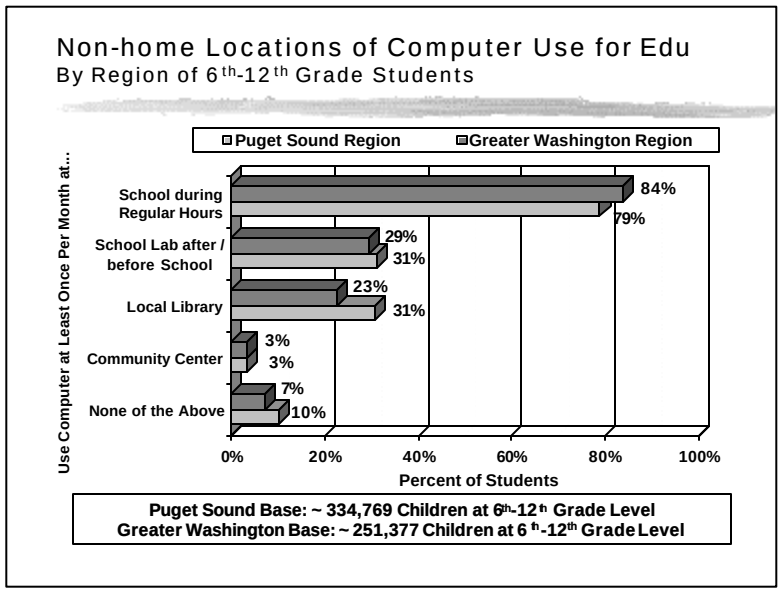
Nearly all Washington students in the 6th through 12th grades contacted in this study report access to a home computer that is available for their schoolwork or education. Only 2% of students reported that they did not have a computer at home to use for their schoolwork or education. Regionally, the differences are nearly negligible, with 98.4% of Puget Sound students able to use home computers for their schoolwork and 96.9% of Greater Washington students report access to home computers. Although the 2000 State Population Survey estimates that 81%-84% of households with 12-18 year old students had home computers in 2000, it may be advisable to tentatively accept the growth implied in our data until the results of the 2002 State Population Survey become available.

Figure 11



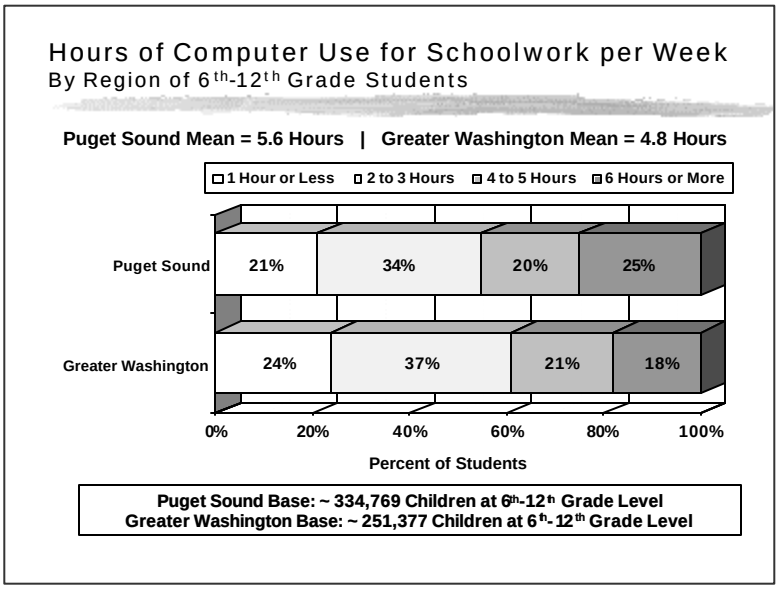
Washington 6th-12th grade students also present very similar access to public computing resources. Approximately four-in-five Puget Sound (79%) and Greater Washington (84%) students use computers at their schools during regular school hours at least once per month. Nearly one-third of Puget Sound (31%) and Greater Washington (29%) students utilize computers in school computer labs before or after school at least once per month. Local libraries serve as an educational resource for public computing in the Puget Sound (31%) slightly more often than in Greater Washington (23%).

Figure 12



Overall, students across the state are only rarely reporting that they do not use public computing resources at least once pre month. However, approximately ten percent, or ~33,500, Puget Sound students and seven percent, or ~17,500, Greater Washington students do not use computers in public education, library, or community center facilities. Nevertheless, in terms of both home and public computing, Washington students from across the state more or less exhibit identical opportunities to access computing.

Figure 13



On average, Puget Sound students (5.6 hours) at the 6th-12th grade levels use computers for their schoolwork and education nearly one hour more each week than students at the same grade levels in Greater Washington (4.8 hours). But, generally, both areas have subsets of students who use computers infrequently and very extensively and, in both Puget Sound and Greater Washington, the median hours of computer use by 6th through 12th grade students is only 3 hours. In Puget Sound, approximately one-fifth (21%) of students use computers for their schoolwork and education at all locations for 1 hour or less each week. Another third (34%) of Puget Sound students use computers in educational activities for 2 to 3 hours each week. Just over two-in-five students in Puget Sound are employing computers for their schoolwork at least 4 hours per week: 4 to 5 hours (20%) and 6 hours or more (25%). In Greater Washington, one-quarter (24%) of students use computers an hour or less each week and more than one third (37%) use computers in their education for 2 to 3 hours. In comparison to Puget Sound, slightly fewer Greater Washington students use computers for schoolwork for at least 6 hours per week (18%).

Currently, Washington students are reporting more extensive use of computers as their level of education increases. The median hours of computer use in education jumps from 2 hours per week for students in middle school, to 3 hours per week for freshman and sophomore classes, and hits 4 hours per week among junior and senior level students. In particular, nearly one third (30%) of 11th and 12th grade students currently access computers for their schoolwork and education at least 6 hours per week, which is twice the incidence of middle schoolers who use computers to this extent. However, substantial portions of students at every level have not integrated computing and education extensively. Seven-in-ten students in the 6th-8th grades are using computers for only 1 hour or less (29%) or 2 to 3 hours (41%). Just over half (55%) of 9th and 10th grade students are using computers 3 or fewer hours per week. Even among 10th and 11th grade students, two-in-five (41%) do schoolwork on computers for no more than 3 hours per week.

Figure 14

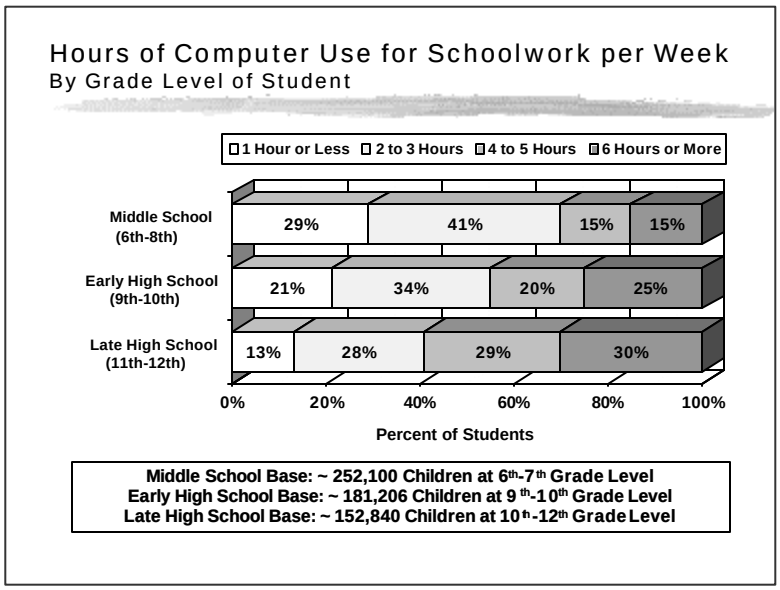
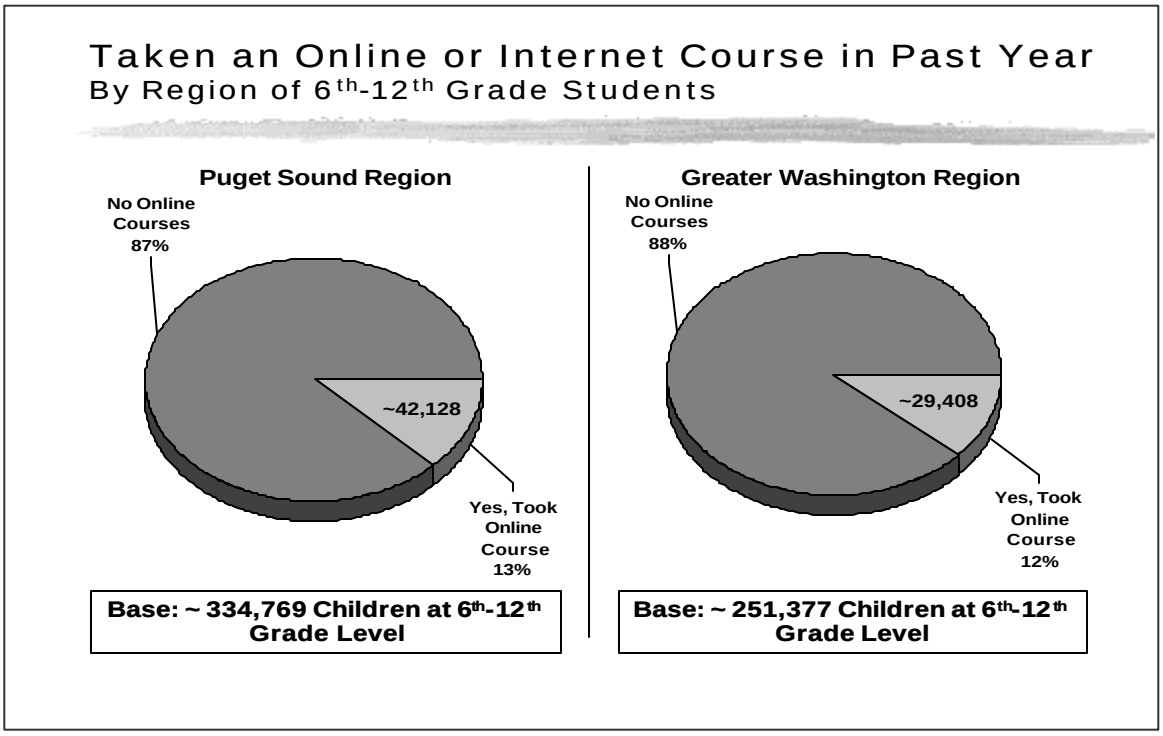
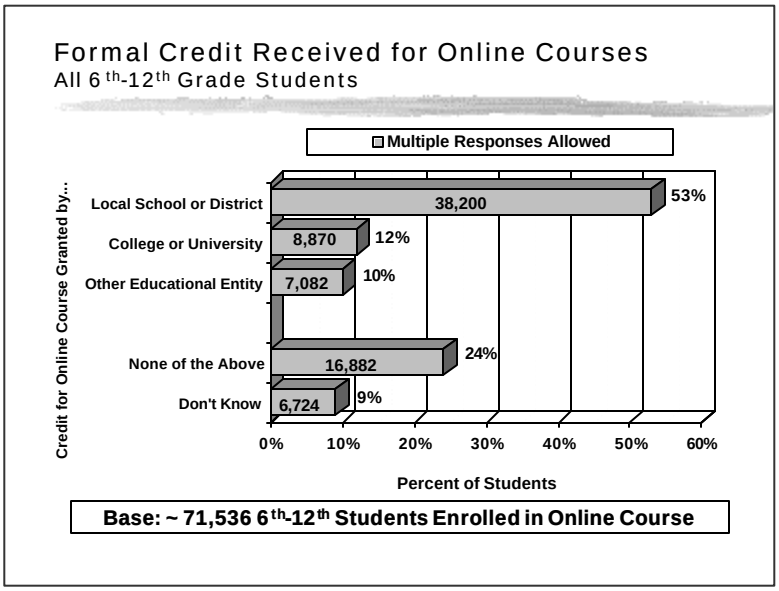


Figure 15



A share of Washington students at the 6th through 12th grade levels have become early adopters of online education in both the Puget Sound and Greater Washington region. Approximately 13% of Puget Sound students, a projected 42,000 6th to 12th graders, have enrolled in some type of online course in the past year. Around 12% of Greater Washington 6th-12th graders, or 29,500 students, took an online course in the past year. Older students appear to be the most likely to have experimented with online education; nearly one-in-five (18%) 11th and 12th grade students enrolled in an online course in the past year.

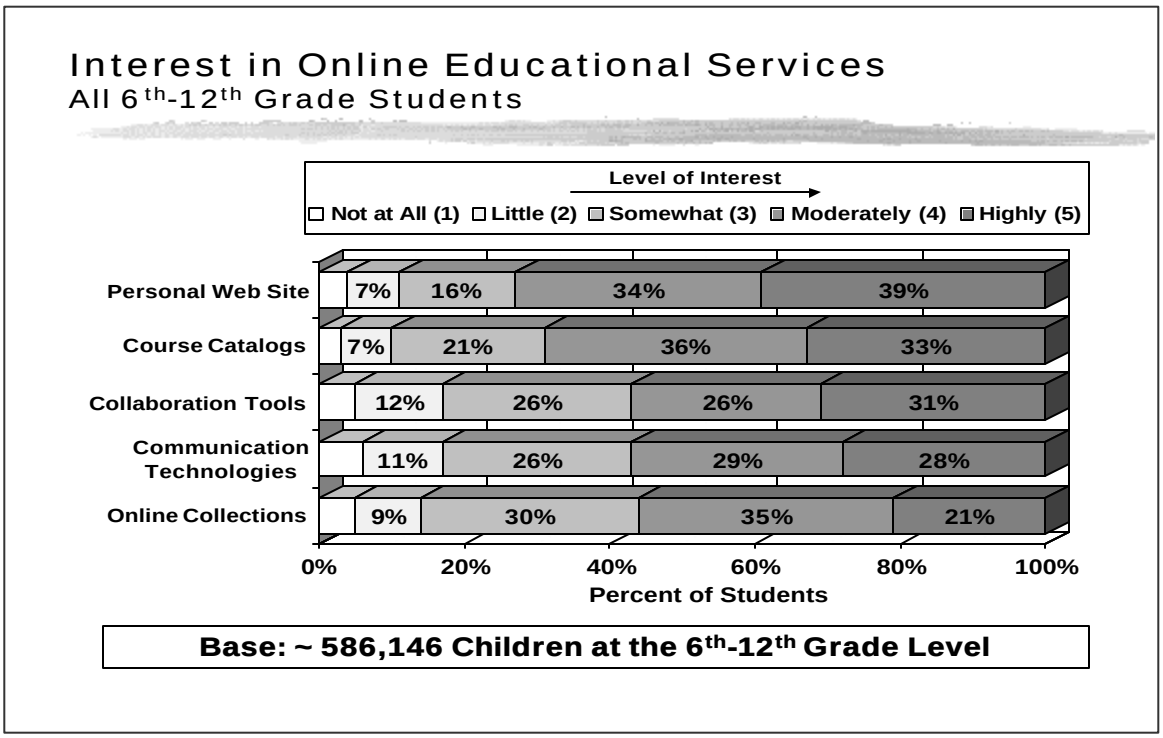
Figure 16



Furthermore, the majority of online course-takers in the 6th through 12th grades are reporting that they received some form of credit for their work. Over half (53%) of students who enrolled in an online course indicate that they received credit from their local school or district—roughly ~38,000 students. One-in-eight students who took an online course in the past year (12%) earned college credit. Only one-quarter (24%) of students reported that they received no credit from an educational institution for their online course work.

Students' Interest in Online Education Services

Figure 17

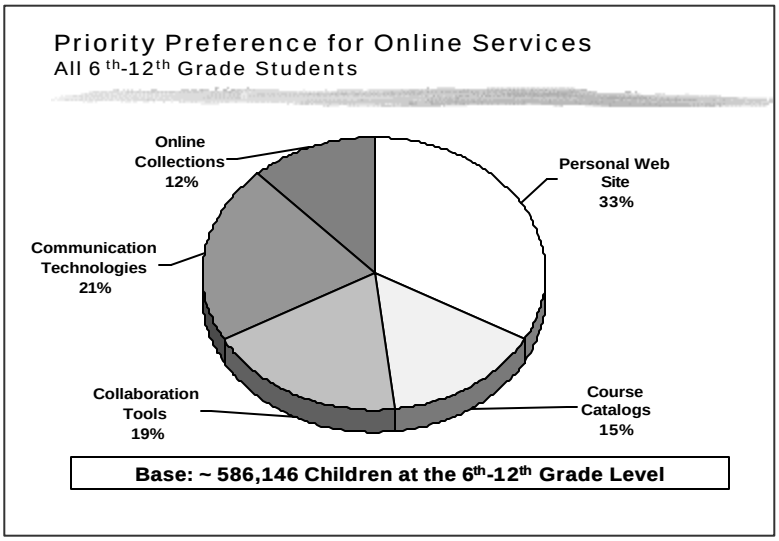


Washington students generally favor the development of online educational services in several forms. For all five of the education services tested, over half considered the services moderately-to-highly interesting, while several categories successfully generate high levels of interest. Across Washington, two-in-five (39%) 6th-12th grade students reported that they are highly interested in a personal web site "that includes customizable features that will allow students to personally track their courses and save a portfolio of their schoolwork to show colleges or employers in the future." One-in-three (33%) students are highly interested in a course catalog "that provides student with choices of online classes that will earn credits for their middle school, high school or college education."

Approximately three-in-ten Washington students in the 6th through 12 grades are highly interest by interactive features: collaboration tools "that allow students to work over the Internet with students around the world in scientific experiments, case studies and cultural exchanges" (31%) and communication technologies "that offer text, voice and video interaction with teachers and others students over the Internet" (28%). Although relatively the least interesting feature, one-in-five (21%) students indicate that they are highly interested in the availability of online collections "that link to interactive content, streaming video, online copes of rare documents, and other resources available to students on the Internet."

Regionally, once again, there is very little demonstrable difference. Students in Greater Washington (71%) and in Puget Sound (75%) express the most interest in a personal web site. In both regions, a majority of students described themselves as moderately or highly interested in each of the tested services.

Figure 18



As a whole, a majority of students did not prioritize any one of the five online services tested. One-third (33%) of Washington students prefer the Personal Web Site to be developed by the Virtual Education Initiative in advance of other services. Although the course catalog was the second most interesting service tested, only 15% of students considered a course catalog the priority in the development of online services for WA students. Interactivity features—communication technologies (21%) and collaboration tools (19%)—receive the second and third highest levels of priority by WA students. Online collections are the priority in online services for only 12% of 6th to 12th grade students.

Like their parents, students express the most interest for advanced courses that earn AP / college credits or honors credits. Three-quarters (77%) of high school students report moderate-to-high levels of interest in AP or college credit courses. Two-thirds (69%) of all 6th-12th grade students are interested in honors courses. Nearly two-thirds (64%) of all 6th-12th grade students in Washington are moderately-to-highly interested in courses earning core subject credits and elective credits. Although only 20% of high school students are highly interested in courses for vocational credits, 41% express moderate levels of interest.

Figure 19

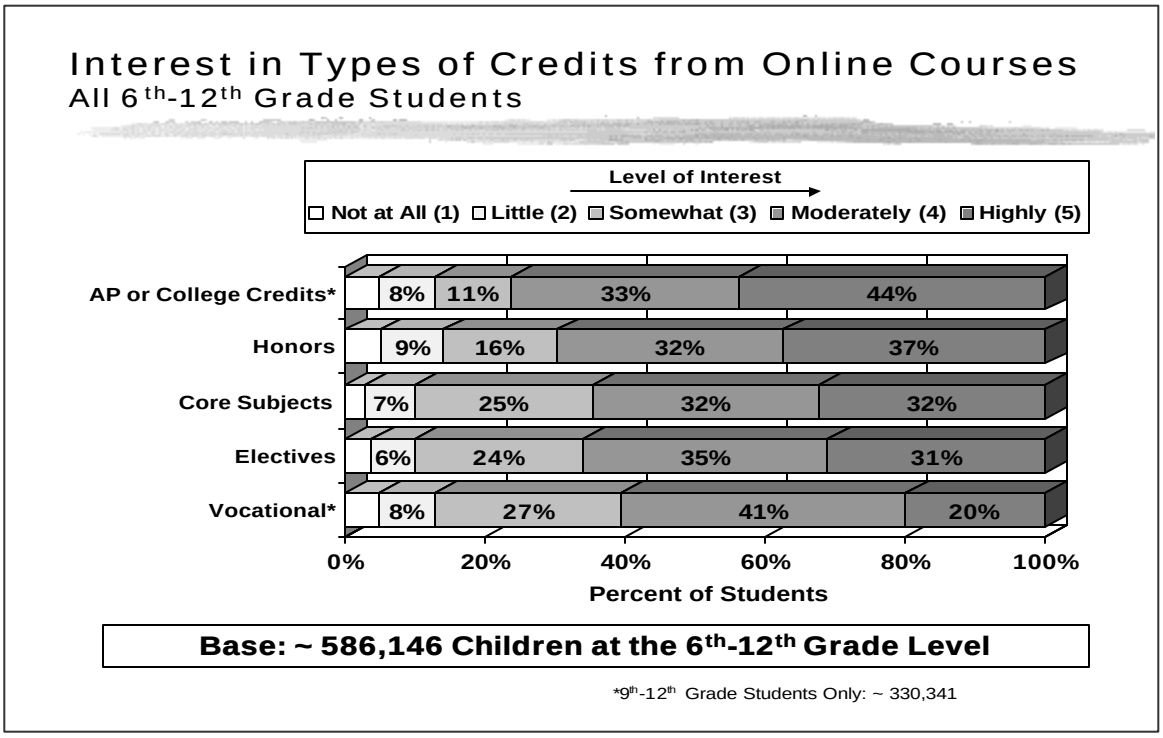


Figure 20

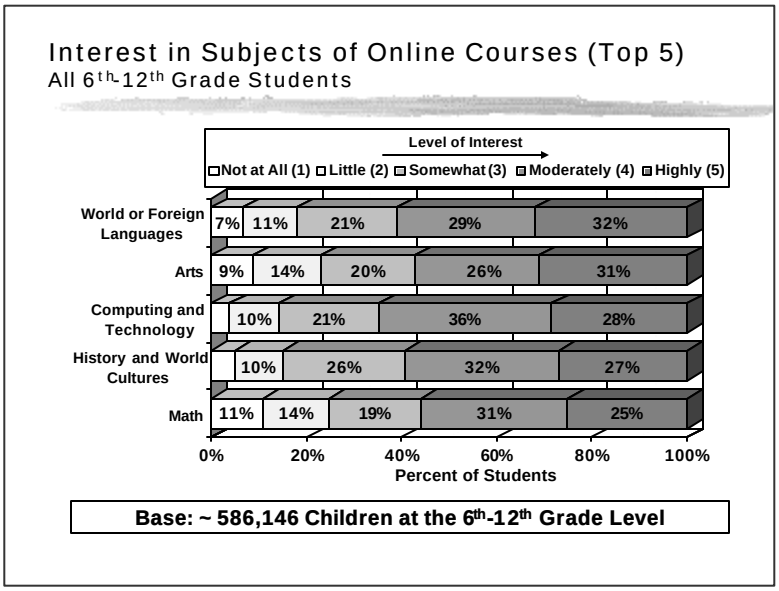
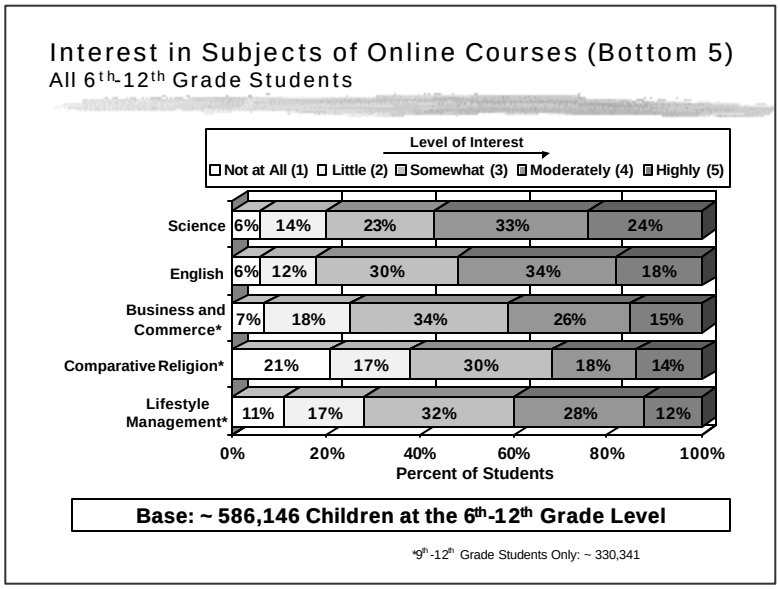


Figure 20 and Figure 21 illustrate student interest levels for ten separate subjects, sorted in descending order of the percentage of students who are highly interested in the subject for online courses. Generally, similar percentages of students express high levels of interest in subjects that range from languages to mathematics, from the arts to computing and technology. Nearly one-third of students are highly interested in online courses in World/Foreign Languages (32%) and in Arts (31%). Over one-quarter of students exhibit high levels of interest in Computing and Technology (28%), History and World Cultures (27%), and Mathematics (25%). In all five cases, over half of the students in 6th through 12th grade demonstrate moderate-to-high levels of interest in these course topics.

Although ranking in the bottom five of these ten subjects, online Science (24%) courses highly interest nearly one-quarter of all students and online English (18%) courses interest nearly one-fifth of all students. Again, when including the percentage of students who are moderately interested in these course topics, over half of students demonstrate a great deal of interest in online courses covering seven major categories of education. Three other subject matters tested only among high school students – Business and Commerce, Comparative Religion, and Lifestyle Management – generated the least amount of interest among students. However, around one-in-seven to one-in-eight high school students are highly interested in these subjects.

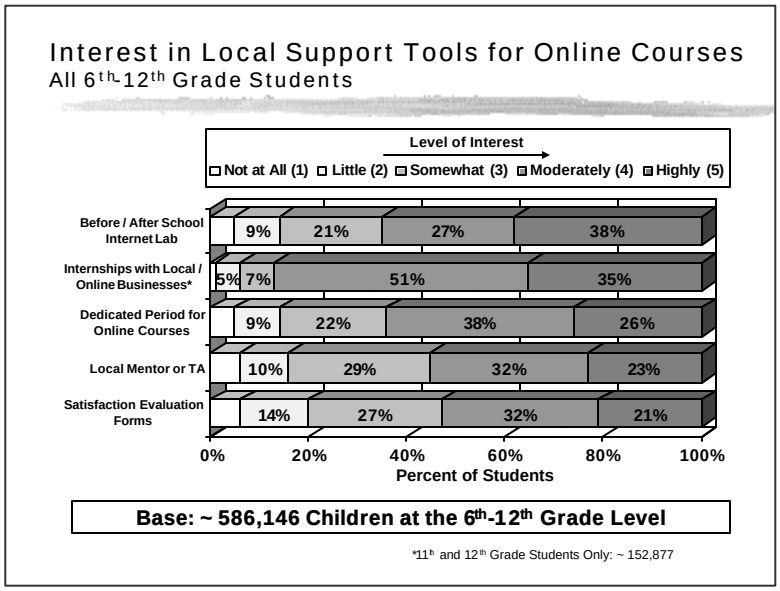
Typically, middles school students show similar or only slightly higher levels of interest in the online subjects, but one area stands out as significantly different. Nearly three-in-four (71%) middle school students report moderate-to-high interest in World / Foreign Language courses online. The level of interest in World / Foreign languages slips to 56% of students in the first two years of high school and falls to around half (49%) of students in the last two years of high school report.

Figure 21



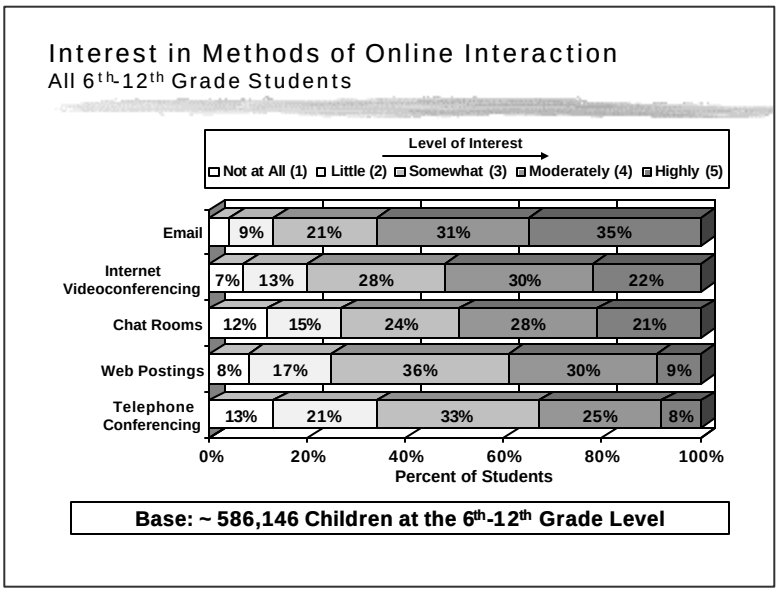
The majority of students do not envision online learning as completely separate from local educational support. In a test of five local support tools that could be offered in conjunction with online education services, a majority of students are at least moderately interested in the availability of each local tool. Focusing on the highest level of interest, approximately two-in-five (38%) of 6th-12th grade students are highly interested in a before- and after-school Internet lab. This includes 50% of students who currently use their school labs before and/or after school and 33% of students who do not currently use their school labs during off-school hours (not illustrated). One-quarter (26%) of 6th-12th grade students are highly interested in a dedicated period or class-time during school hours for students taking online courses, while over one-fifth of 6th-12th grade students are highly interested in local mentors or teaching assistants (23%) and satisfaction evaluation forms to rate their experiences with online courses. Over one-third (35%) of 11th and 12th grade students express high levels of interest in internships with local and online businesses in support of their online learning, and nearly all (86%) are at least moderately interested in this opportunity.

Figure 22



When asked to what degree they would prefer various methods of interacting with students and teachers in online courses, middle and high school students do not point to any one technology as far superior to the rest. In fact, nearly half (46%) of students do not consider any of the five tested methods of interaction as 'highly interesting.' One-third (35%) of students are most interested in email communications during online courses. Just over one-in-five consider Internet videoconferencing (22%) and/or chat rooms (21%) as highly suitable methods of interacting with the teacher and other students in an online course. Web postings on electronic bulletin boards (9%) and telephone conferencing (8%) are the least likely to generate high levels of interest as methods of online interaction. As found throughout this section, students in Puget Sound and in Greater Washington exhibit nearly identical interest levels in both local tools and methods of interaction to support students enrolled in online courses.

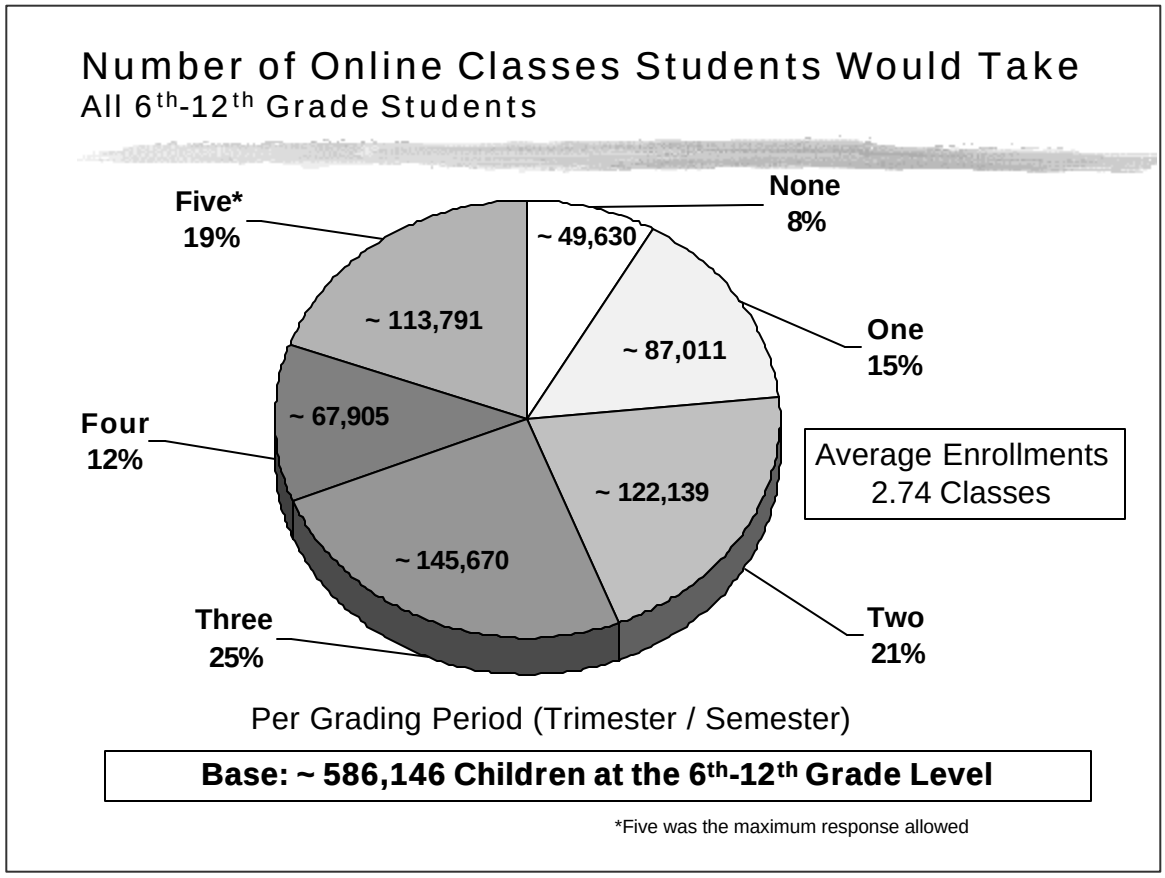
Figure 23



Potential Online Course Enrollments

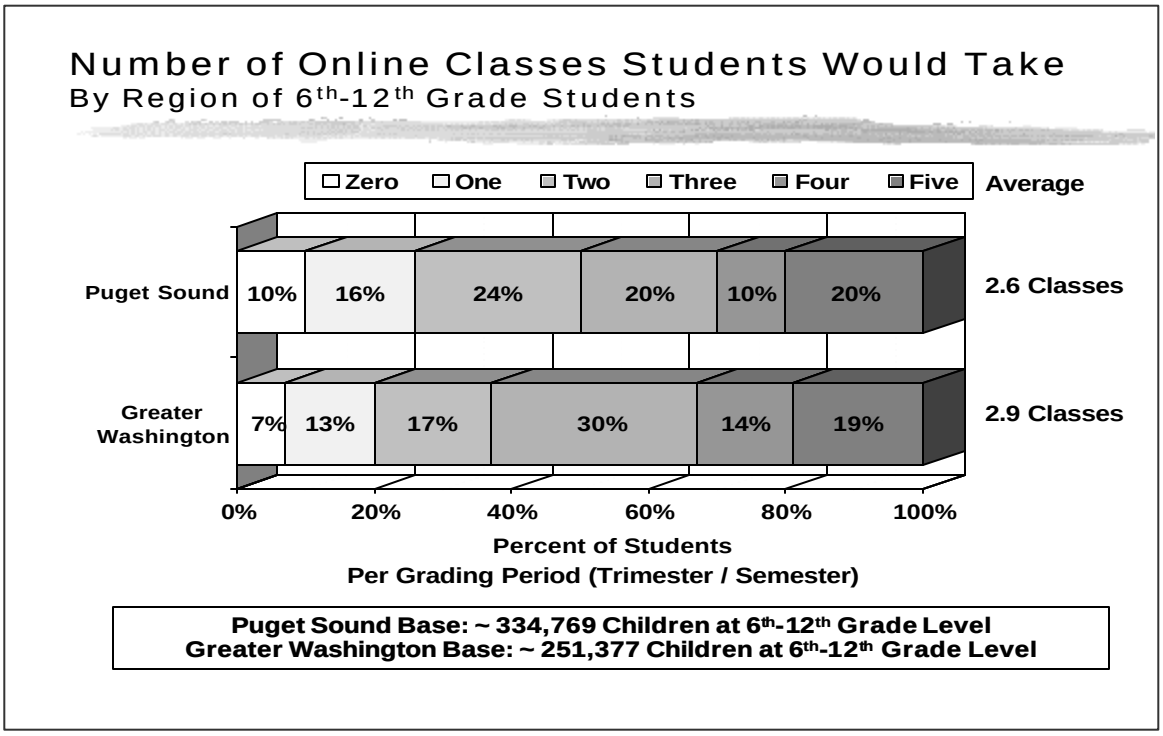
Both parents and students were instructed to assume that online classes could replace or be taken as substitutes for regular schoolroom classes. Each online class would last as long as a regular class (students only), require the same amount of schoolwork (students only), and meet the same state performance standards of schoolroom classes (parents only). After the description, parents and students were asked for the number of classes, from a total of 5, that they would substitute/allow to be substituted by the student each grading period (trimester or semester). This measurement implicitly assumes that there are no barriers to enrollment and that every student is able to find and enroll in the online class that meets their needs. In this respect, these measurements do not present the potential levels of substitution that will occur in the next several years as much as they present the upper limit on the level of demand for online courses among current 6th and 12th grade students.

Figure 24



Despite these caveats on the measurement, 6th-12th grade students are demonstrably enthusiastic about the prospects of enrolling in online courses. On average, students report they would enroll in 2.74 online courses for every 5 courses taken each grading period—a substitution of more than half of schoolroom-based classes. While only 8% of students report that they would not substitute any of their schoolroom classes with an online course, one-in-five (19%) 6th through 12th grade students indicate that they would completely replace schoolroom-based learning with online classes. In addition to those who express an interest in moving entirely to the online environment, another 12% would replace four of every five schoolroom-based classes with online classes and 25% would enroll in three online courses for every five classes taken.

Figure 25



The enthusiasm for online learning opportunities extends to both regions, although somewhat stronger in the more rural region. Greater Washington students estimate that they would replace nearly three-in-five (2.9 average) onsite classes with online classes if presented with a complete spectrum of online-learning, substitute courses from which to choose freely. Puget Sound students provide a more modest estimate, but still equivalent to a substitution of at least one online class for every two (2.6 average) onsite classes currently attended.

Although these averages offer somewhat differing pictures of total substitutions, the course-load of online classes would not vary dramatically between these two regions. The most noticeable difference may be a larger percentage of Greater Washington students (44%) enrolled in three or four online classes in comparison to Puget Sound students (30%). Conversely, Puget Sound students (50%) would be more likely than Greater Washington students (37%) to enroll in two or fewer online courses. However, comparable numbers of students in Puget Sound (20%) and Greater Washington (19%) consider online education as an opportunity to replace all onsite learning classes.

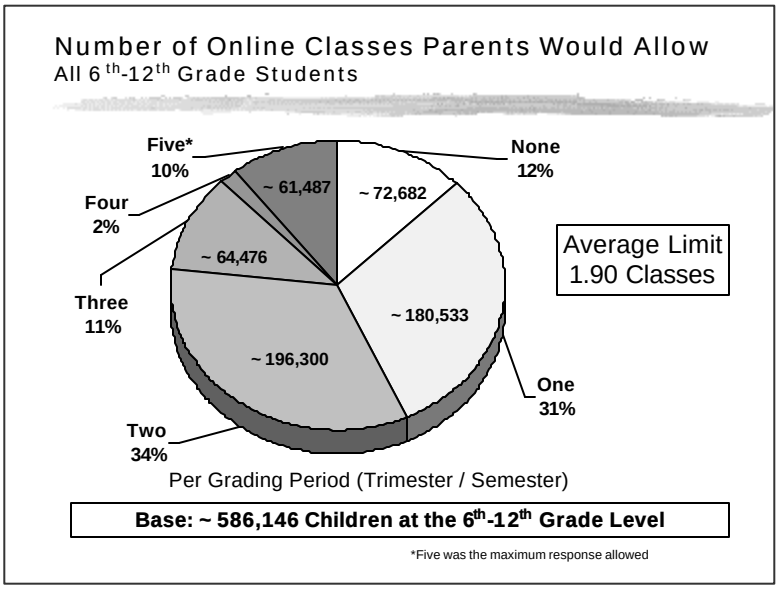
The students who took an online course in the past year—and presumably more knowledgeable of the existing online learning environments—seem to confirm the favorable opinions of the possibilities for online learning. Students who enrolled in an online course in the past year estimate that they would enroll in 3.0 online classes per district grading period (trimester or semester), compared to 2.7 classes for students who did not enroll in online courses last year. In this respect, early adoption of online learning has not caused an erosion of support among middle and high school students. (*The true n of students with online experience is 45, so these estimates may be less reliable than other statistics quoted in this report.*)

When asked for what one online course they would enroll in first, the students offer a different picture than illustrated in their general subject interests (Figures 20 and 21). Math courses, particularly algebra and pre-algebra, are the most widely mentioned subjects. History & World Cultures and Sciences are the second and third most frequently mentioned subjects. World & Foreign Languages, Computing & Technology, and the Arts—although the most interesting to students overall—are not the types of subject matters that students are most likely to pursue first.

Figure 26
First Course That Student Would Take Online

Math	**23%**	Algebra (including pre-)	10.8%
		Math (Integrated or Unspecified)	6.8%
		Calculus (including pre-)	3.0%
		Geometry	2.0%
		Trigonometry	0.3%
History & World Cultures	**18%**	History (General or Unspecified)	6.2%
		World History (incl. European)	4.8%
		US History	3.0%
		Social Studies	1.5%
		World Cultures	1.2%
		Government (American and State)	1.0%
		20th Century History	0.2%
		Sociology	0.2%
Sciences	**15%**	Science (General or Unspecified)	4.5%
		Biology	3.0%
		Chemistry	3.0%
		Physics	1.2%
		Life and Animal Sciences	1.0%
		Physical and Earth Sciences	0.7%
		Medical and Health	0.5%
		Engineering	0.3%
		Psychology	0.2%
		Aerospace	0.2%
English	**13%**	English (General or Unspecified)	7.8%
		Language Arts	2.0%
		English Composition and Writing	1.0%
		American and English Literature	1.0%
		Journalism	0.3%
		Reading	0.3%
		Folk Literature	0.2%
World or Foreign Languages	**12%**	Spanish	4.8%
		Foreign Language (General or Unspecified)	2.8%
		French	1.5%
		German Language	1.2%
		Japanese Language	1.0%
		Sign Language	0.3%
		Chinese Language	0.2%
Computing and Technology	**5%**	Computer or Technology Skills	4.5%
		Web Development	0.5%
Arts	**5%**	Arts (General or Unspecified)	3.8%
		Drawing and Animation	1.0%
		Interior Designing	0.2%
		Photography	0.2%
Business and Commerce	**4%**	Business (General or Unspecified)	2.3%
		Economics	1.0%
		Accounting	0.2%
		Business Law	0.2%
		Marketing	0.2%
Comparative Religion	**1%**	Religion	0.8%
Lifestyle Skills and Management	**1%**	Physical Education (PE)	0.3%
		Typing	0.2%

Figure 27

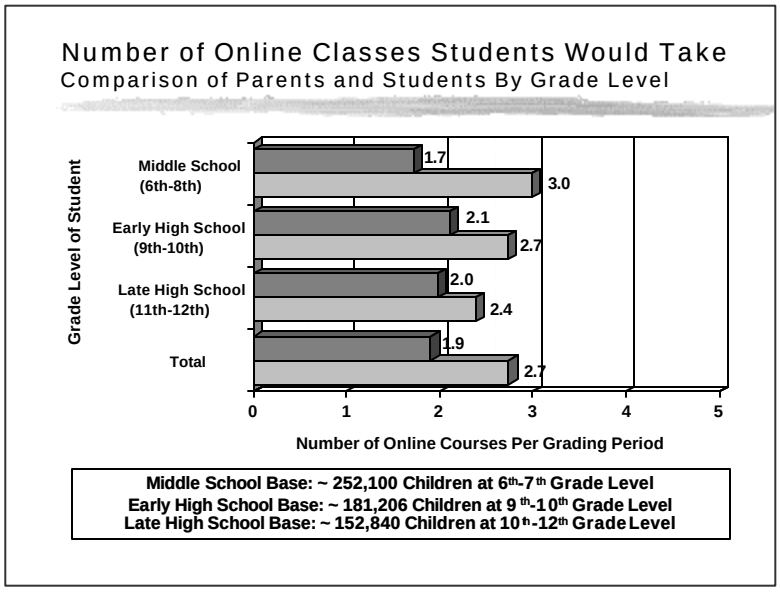


On average, parents indicate that their students may substitute nearly two of every five (1.9 average) courses each trimester or semester—nearly 40% of all classes. However, parents are clearly more reserved about the prospects for substituting online courses for onsite courses than their children are. Whereas the majority of students indicate a willingness to substitute three or more courses per grading period, the majority of parents report that they would limit their children to one (31%) or two (34%) online classes. About half as many parents (10%) as students (19% - Figure 24) would allow their children to convert completely to online learning. In at least one similarity with students, only a few (12%) parents dismiss the opportunity for online public education outright.

Regionally, parents may limit enrollments in a way that erodes some of the differences between students outlined above. In Greater Washington, although students would enroll in 2.9 online classes on average, parents would limit their enrollments to 2.0 on average. In Puget Sound, parents would limit their children's enrollments to 1.9 classes, although students would be willing to enroll in up to 2.6 classes on average.

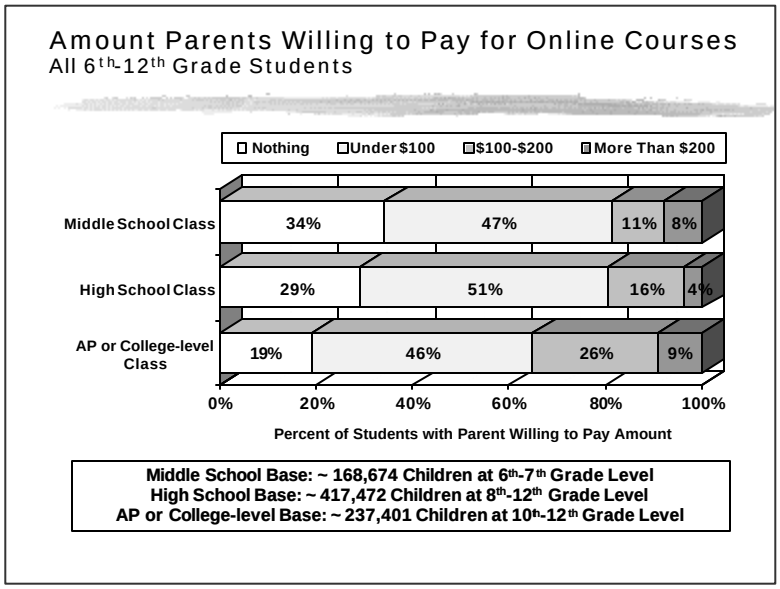
The differences between parents and students are most pronounced when examined at the level of students' current grade, in particular, for middle school students. On average, middle school students are willing to substitute nearly twice (3.0 v. 1.7) as many schoolroom classes than their parents are willing to allow. High school students tend to be more realistic—perhaps having a better understanding of the implications than middle schoolers—and parents tend to be more lenient with their older children, which results in an increasingly narrow difference in students' aspirations for and parents' limitations on online course enrollments. Specifically, students in their final two years of high school estimate that they would substitute 2.4 classes on average, while parents would relax their limits to 2.0 classes on average.

Figure 28



Although parents may hinder children's total number of enrollments, parents are willing to cover some unsubsidized costs of delivering education online. Only one-third of middle and high school students have parents that indicate they would not pay anything for their child to enroll in an online middle (34%) or high school (29%) course. This declines to one-in-five (19%) parents who are unwilling to pay for AP and college-level courses. Parents of 6th-12th grade students most frequently indicate that they want to limit their out-of-pocket expenses to under $100. About half of parents with students currently at the appropriate grade level report that they would pay a nominal fee under $100 per course to enroll their children in middle school (47%), high school (51%), and AP/college-credit (46%) courses.

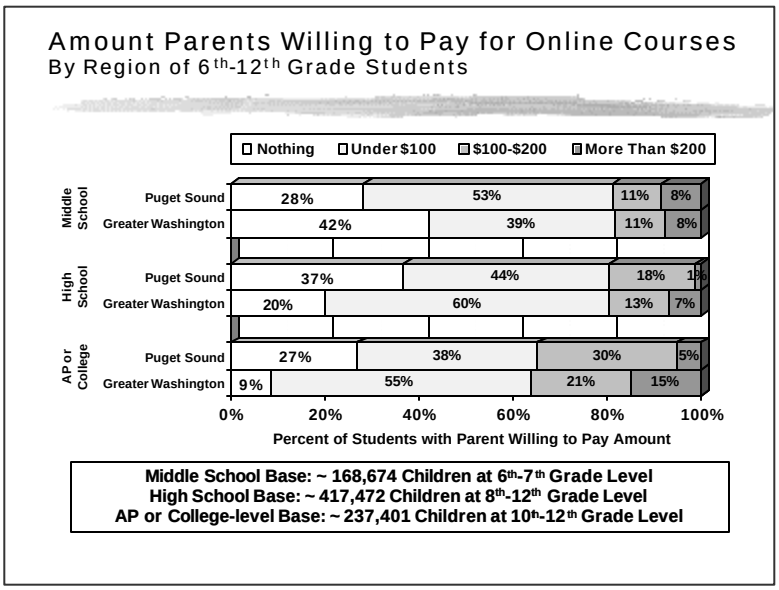
Figure 29



Approximately one-in-five parents of middle school and high school students indicate they would pay $100 or more per course for middle school (19%) or high school (20%) courses. For AP/college-credit courses, over one-in-three (35%) parents of students in the 10th through 12th grades indicate their willingness to pay over $100 or more per course.

Notably, the students in Greater Washington – whose households earn $14,000 less per year – have parents who are more willing to cover unsubsidized costs than students in the Puget Sound counties. In Greater Washington, students' parents are increasingly willing to cover some costs as the grade or education level advances. Whereas 42% of middle school students in this region live in households where the parent is unwilling to pay anything for online classes, this drops to 20% for high school students. In Greater Washington, resistance to covering some unsubsidized costs of online courses nearly disappears (9%) for AP and college classes. In Puget Sound, students live in households in which the parents are generally more reluctant to cover any unsubsidized costs of delivering secondary education and AP/college-level courses online, perhaps reflecting the greater availability of such offerings in this region.

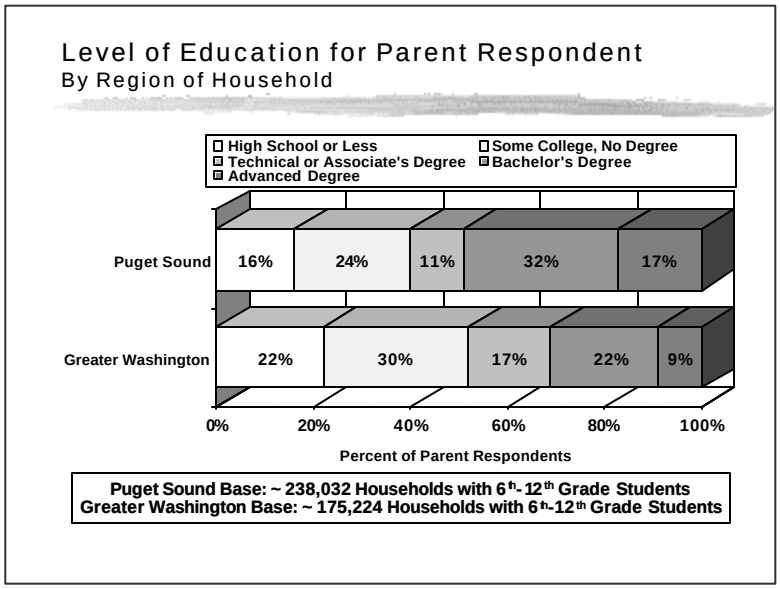
Figure 30



Household and Respondent Demographics

The Puget Sound households possessed parents with higher levels of education than Greater Washington households. Nearly fifty-percent (49%) of the Puget Sound parents report having at least a bachelor's degree, however, only one-third (31%) of the rural or Greater Washington region report this level of education. In contrast, just over half of Greater Washington parents indicate they completed no more than a high school education (23%) or attended college, but received no degree (30%).

Figure 31



Among households with middle and high school students, the annual household income of Puget Sound residents is approximately $14,000 higher than the Greater Washington residents. Puget Sound households have $100,000+ of annual income more than twice (32% v. 14%) as often as Greater Washington households. Greater Washington households are nearly twice (21% v 12%) as likely as Puget Sound households to report annual incomes below $40,000.

Figure 32

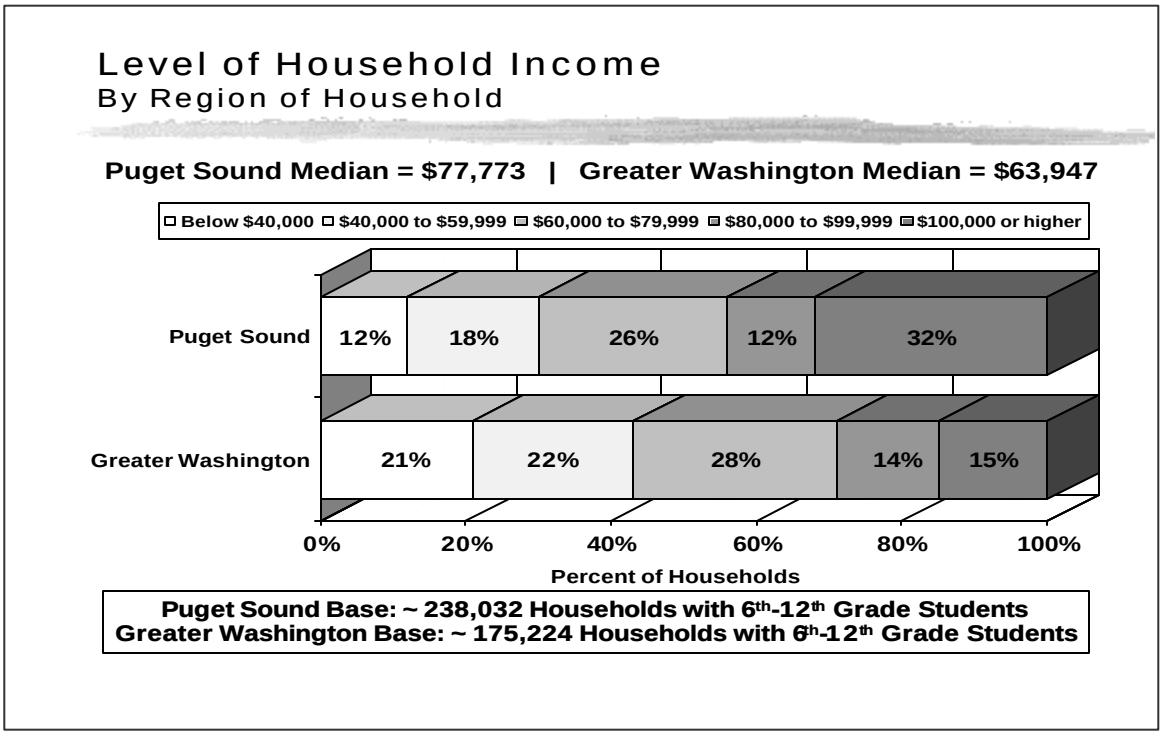
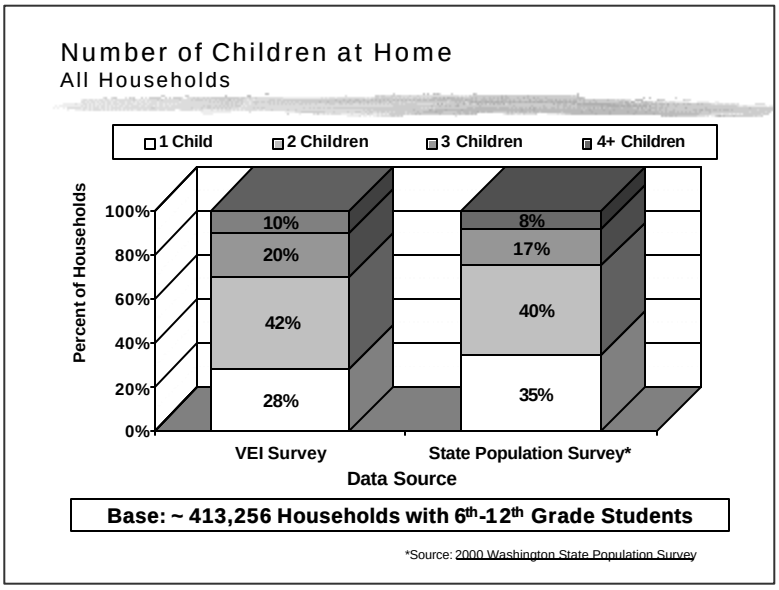


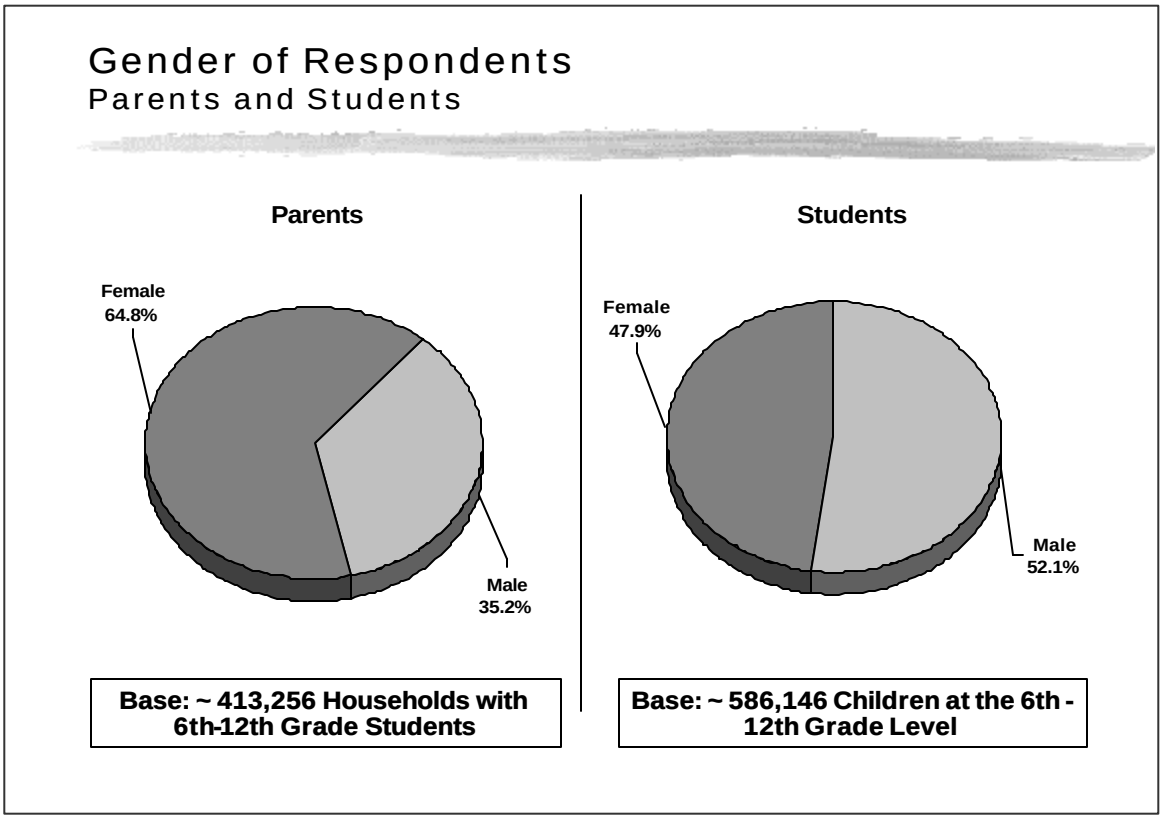
Figure 33



Our sample of households, although sufficiently representative, has slightly more children, on average, than projected by the 2000 Washington State Population Survey: 2002 Virtual Education Initiative Survey = 2.15 and 2000 Washington State Population Survey = 2.03. Most of the households that met our target criteria reported raising only one (29%) or two (42%) children total. Approximately 30% reported that three or more children 18 years old or younger lived at their residence.

Sixty-five percent (65%) of households surveyed were represented by the female head of household; only 35% of households were represented by the male head of household. The sample of 6th through 12th grade students provides nearly equal representation from male and female students.

Figure 34



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Appendix E

Glossary

Advanced Placement (AP). The College Board's Advanced Placement (AP) Program enables students to pursue college-level studies while still in high school. Thirty-five courses in 19 subject areas are offered. Based on their performance on rigorous AP Exams, students can earn credit, advanced placement, or both, for college

Asynchronous. Communication in which interaction between parties does not take place simultaneously.

Bandwidth. A measure of the information carrying capacity of a communications channel; the higher the bandwidth, the greater the amount of information that can be carried.

Broadband. Communications which are capable of carrying a wide range of frequencies and a large amount of data. Broadcast television, cable television, microwave, and satellite are examples of broadband technologies. Broadband technologies typically operate at a data transfer range in excess of 1 megabit per second (mbps).

Certificate of Mastery. The state board of education has established the 2007-08 school year as the first year in which graduating high school students shall be required to have attained the state certificate of mastery in order to graduate, in addition to other state and local graduation requirements. It is expected that the initial certificate of mastery will be comprised of reading, writing, communications, and mathematics.

Dial-up. A communication connection from your computer to a host computer over standard phone lines. Unlike a dedicated line, you must dial the host computer in order to establish a connection. Dial-up line is currently the most popular form of Net connection for the home user. Most dial-up connections operate at a data transfer rate of 28.8 to 56 kilobits per second (kbps).

Digital Content. Any kind of digital information in the form of text, audio, video, and graphics that is provided and accessed through email, online classes, Web sites, CD-ROMs, and other computer-based interfaces.

Digital Tools. Functions that provide users with the ability to create digital content and interact with others. Some examples of digital tools include Web page templates and generators, online discussion boards, and listservs.

Distance Education/Distance Learning. Instructional delivery that does not constrain the learner to be physically present in the same location as the instructor, and may be defined as "technology-assisted individual and classroom instruction that connects students and teachers who are physically removed from each other". Historically, distance education meant correspondence study, but today, audio, video and computer technologies are more common delivery modes. Distance education is often used broadly to encompass videoconferencing, web, email, correspondence, instructional television, satellite, and online courses.

EALRs. Essential Academic Learning Requirements, which represent the specific academic skills and knowledge students will be required to meet in the classroom. These statewide academic standards have been developed for the "basics"--reading, writing, communication, and mathematics, and for science, social studies, the arts, and health & fitness.

Host. A computer system that is accessed by a user working at a remote location. Typically, the term is used when there are two or more computer systems connected by a network or the Internet. The computer system that contains the data is called the "host", while the computer at which the user sits is called the remote terminal.

Hosting. Hosting is the business of housing, serving, and maintaining files for one or more Web sites or services.

Integrated Services Digital Network (ISDN). A telecommunications standard allowing communications channels to carry voice, video, and data simultaneously.

Interactive Media. Frequency assignment that allows for a two-way interaction or exchange of information.

Internet. A network of computer networks linking computers from colleges and universities, government

agencies, institutions, and commercial organizations worldwide. These networks are able to communicate with each other because they all use the same protocol for sending data (i.e., TCP/IP). Some computers act as gateways connecting the various networks together. Owned by the U.S. government, until recently it was used primarily for research and educational purposes.

Internet 2 or "Abilene". A project of the University Consortium for Advanced Internet Development (UCAID) and major telecommunications corporations. Abilene has developed an advanced backbone network to connect regional network aggregation points, called gigaPoPs. This network is intended to complement research networks now being used by UCAID member researchers and educators. A primary goal of the Abilene Project is to support and encourage the development of advanced applications.

Internet Protocol. An internet-working protocol for connectionless communications over multiple networks. IP is responsible for addressing information and directs information to its proper destination over a TCP/IP network.

K-20 Educational Telecommunications Network (K-20 Network). In 1996 the Washington State Legislature recognized the critical role of technology in education and authorized the building of the $55 million K-20 Educational Telecommunications Network. The result is a high-speed telecommunications backbone that enables the use of the Internet and live two-way videoconferencing in all of Washington's public education sectors, and connects the schools and sectors with one another. Believed to be the first of its kind in the nation, the K-20 Network was born from the collaborative efforts of representatives from K-12, community and technical colleges, baccalaureate institutions, the Department of Information Services, the Legislature and private sector technology providers. Online access to information, classes, and administrative transactions are all available via the K-20 Network.

Local Area Network (LAN). A network of directly-connected machines (located in close proximity), providing high speed communication over physical media such as fiber optics, coaxial cable, or twisted pair wiring.

Learning Resource. A learning resource is any item that can be used for learning (in school or at home) by a teacher, student or parent.

Multimedia. Any document which uses multiple forms of communication, such as text, audio, and/or video.

Online Learning Environment. An educational setting (which may or may not be a traditional classroom) that has any number of active multimedia devices used to augment the learning experience.

Online Courses. Courses, discussions, or other communication occurring in an electronic format via the Internet.

Online Mentors. Teachers or academic advisors working with students in an online environment.

Open Source. Hardware or software with characteristics that comply with specified, publicly maintained, readily available standards and that therefore can be connected to other systems that comply with these same standards.

Pacific Northwest GigaPoP. A gigaPoP is a regional network aggregation points being formed by Internet2 universities to connect to a variety of high-performance and other types of networks. GigaPoPs provide scalable high-speed connection points. Pacific Northwest GigaPoP is a network provider that serves organizations in the Northwest U.S. by providing highest-speed access to the Internet, next-generation Internet services and technology, and R&D testbeds.

Platform. The platform defines a standard around which a system can be developed. Once the platform has been defined, software developers can produce appropriate software and managers can purchase appropriate hardware and applications. The term is often used as a synonym of operating system. The term cross-platform refers to applications, formats, or devices that work on different platforms.

Portal. A Web page that offers the visitor a "complete" resource. Most of the popular portals are designed to optimize their compatibility with one or more Web search engines. Many portals also offer value-added services such as e-mail accounts, Web page hosting, or filtered information flow.

Seamless Technology. In an online course, technology is said to be seamless (or transparent) when it is easy to use, intuitive in nature, and is not the focus of the learning experience. If programs are difficult to use and the system has frequent breakdowns, the technology is not seamless and hinders the learning process. Technology should merely be a means to deliver course content, facilitating the learning process

Seat-Time. Historically, secondary school graduation requirements have been universally based on seat time- "Carnegie units," a standard of measurement representing one credit for completion of a one-year course meeting daily. Education reform has shifted the focus to measuring learning mastery instead of seat time and course completion.

Standards-Based Computers. Computers that comply with formal, approved standards reflecting agreements on products, practices, or operations by nationally or internationally recognized industrial, professional, trade associations or governmental bodies. Current Office of Superintendent of Public Instruction (OSPI) minimum recom-

mended standards for K-12 computers are: Pentium II 266 MhZ or higher, 17" or larger color monitor (minimum 800 x 600 resolution at 256 colors) or Pentium II 266 MhZ or higher laptop, keyboard and mouse, min. 32 MB RAM, CD-ROM drive, Ethernet NIC card; or Mac G3 or G4 or iMac with 15" or larger color monitor or PowerBook G3 or G4 or iBook, keyboard and mouse, min. 32 MB RAM, CD-ROM drive, Ethernet.

State Funding Apportionment. Most of the large state entitlement programs (basic education, special education, learning assistance, and bilingual) are paid through apportionment formulas. Enrollment is the main driver of the funding formulas. Funding increases or decreases with the actual enrollment reported during the school year. The basic education formula is extremely complex. Formula factors include: varying staff/student ratios for different grade levels; separate staff unit allocations for administrative, instructional, and classified staff; weightings for the education and experience of staff (mix factors); allocations for benefits and non-employee related costs (NERC); enhanced funding for small schools; enhanced funding for vocational programs; and separate rates for Running Start students. The average basic education allocation per full time student in 2000-2001 was $3,950.

Synchronous. Communication occurring between parties that are temporally synchronized. That is, communication that occurs between folks at the same time, although not necessarily in the same place. Example: Internet chat is synchronous; email is asynchronous.

T1. A digital carrier capable of transmitting 1.544 megabits per second (Mbps) of electronic information. It is the general term for a digital carrier available for high volume voice, data, or compressed video traffic. T1 is a standard for transmission that is accepted in North America. A T1 line is comprised of twenty-four 56 (or 64) kilobits per second (kbps) digital channels.

Teleconferencing. Interactive electronic communication between two or more people at two or more sites which make use of voice, video, and/or data transmission systems: audio, audiographics, computer, and video systems.

Videoconferencing. Communication across long distances with video and audio contact that may also include graphics and data exchange.

Virtual High School. A state approved and/or regionally accredited school offering secondary courses through Internet-based delivery. It usually includes an online discussion forum where most of the conversations relating to the coursework take place (either synchronously or asynchronously).

Virtual Classroom. A learning environment that is created through the use of technology. This learning environment could involve a discussion made possible by electronic communications between two or more people in different locations. Participants could also interact with each other through real-time sound and video that is transmitted between locations via the network.

Virtual School. A virtual school exists in cyberspace, virtually everywhere. This allows for two way interactive learning anytime, anywhere, and for any student. A virtual school usually delivers its course materials via the Web.

Wide Area Network (WAN). A physical or logical network that provides data communications to a larger number of independent users than are usually served by a local area network (LAN) and is usually spread over a larger geographic area than that of a LAN. WANs may include physical networks, such as Integrated Services Digital Networks (ISDNs), X.25 networks, and T1 networks. WANs may be nationwide or worldwide.

WASL. The state-level Washington Assessment of Student Learning (WASL) assessments require students to both select and create answers to demonstrate their knowledge, skills, and understanding in each of the Essential Academic Learning Requirements (EALRs)--from multiple-choice and short-answer questions to more extended responses, essays, and problem solving tasks. The WASL currently is comprised of a series of criterion-reference tests in reading, writing, listening, and mathematics at grade 4, 7, and 10. In addition, science tests in grades 8 and 10 are in a field testing stage of development.

Web Site. One or more web pages available on the World Wide Web, usually consisting of a home page and additional pages accessed via the home page via hyperlinks.

For more information about the
Washington Digital Learning Commons:

www.learningcommons.org
206.616.9940

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