

**Before the Federal Communications Commission
Washington, DC 20554**

In the Matter of
Broadband Needs in Education, including Changes to E-Rate Program

GN Docket Nos. 09-47, 09-51, 09-137; CC Docket No. 02-6; and WC
Docket No. 05-195
Reply Comments – NPB Public Notice # 15

December 8, 2009

Secretary Marlene H. Dortch
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Dear Madam Secretary:

Thank you for the opportunity to provide feedback on the National Broadband Plan and E-Rate program related to online learning. This letter is in response to the Public Notice the Commission released on November 3, 2009.

On behalf of the International Association for K-12 Online Learning (iNACOL), I am pleased to respond. These comments are organized around the questions in the notice seeking feedback on broadband needs in education, including changes to the E-rate program to improve broadband deployment. Thank you for these questions that recognized the importance of expanding educational opportunities through virtual schools and online learning as a driver for broadband for students across the United States.

Online and blended learning in the K-12 environment is a new innovation and growing rapidly. The United States Department of Education reports that online learning is more effective than traditional education based on student achievement. A NCES study on K-12 distance learning showed the primary reason K-12 school districts offer online courses is the course is that the otherwise unavailable – leveling the playing field by offering courses unavailable in students' local schools.

Online courses provide flexibility for using school time differently, allowing for acceleration of student learning and additional instructional support and time for struggling students. Online course design varies in the use of technological and teaching approaches – including facilitation of robust discussions online, the use of project-based learning, collaborative learning, gaming, working in virtual worlds, simulations, artificial intelligence, and cognitive tutors embedded in course design. The instructional models vary in pedagogical approaches for enhancing teacher-student interactivity, student-student interactions, and student-content interactions. Teachers are asking for more instructional resources and fully online curriculum in an online format to help in

differentiating learning to meet the needs of each student both in their face-to-face and online courses. Virtual schools, blended and online learning are creating new models for delivery and design of curriculum, instruction and assessment. For example, online programs are implementing performance-based models using real-time data to track student progress.

Virtual schools and online learning are key drivers of broadband across America.

Over two million K-12 online student enrollments were reported for the 2008-2009 school year. Data suggest that in about six years 10 percent of all courses will be computer-based, and by 2019 about 50 percent of courses will be delivered online. Michigan and Alabama recently passed legislation to require all students to complete an online course as part of high school graduation requirements. These initiatives, in addition to the other 48 states online learning policies can be found in the annual Keeping Pace report (www.kpk12.com). While these are exciting initiatives, the lack of policy support and Internet access/broadband will determine whether all students have access to online learning. The ability to access educational opportunities depend on broadband access to schools, homes and communities. Many students do not have broadband access to the home.

Online programs such as the Florida Virtual School are performance-based and competency-based learning and funding models. Competency-based models of funding K-12 education are critically important (rather than seat-time) for focusing on student performance. Moving education towards competency-based, multiple pathways for learning and student success is transformative.

The FCC could play a role in pursuing policies and priorities that support virtual schools and other models of competency-based, online learning as a key driver for broadband.

The FCC has an opportunity to provide a policy priority through E-Rate program as a lever for driving broadband through online learning and focusing on competency-based learning. E-Rate requirements to fund broadband in education could make competency-based policies and funding models for any time, any place learning in state applications a competitive priority for funding.

In summary, new opportunities for 21st century learning are available through online and blended learning models.

BROADBAND IMPLEMENTATION

2. We seek comment on school and school system broadband initiatives including infrastructure and large-scale application deployment.

c. What are the most common needs heard from classrooms and instructional leaders with regard to using broadband for instructional or other purposes?

One of the single biggest challenges for schools and school systems, including virtual schools, is the lack of high-speed broadband Internet access to students at home. From pandemic planning, continuity of learning to virtual schools and offering online courses, one of the most pervasive barriers is that not all students or teachers have broadband Internet access in their homes.

Online learning can make available more high-quality educational opportunities and courses to K-12 students in every geographic region. A major barrier is lack of high-speed broadband access for students and teachers at home.

Needs:

- Home Internet access: E-rate to support home access to the Internet connected to schools and school systems
- Remove barriers from FCC restricting broadband expansion of school networks to community or homes: filtering restrictions, restrictions on pipes, networks and access, access to home for virtual schools and online learning and any time, any place learning.
- Competency-based funding vs. seat-time: Prioritize applications with a focus on policy changes as a lever. Specifically, states and districts that allow funding and course credits by competency without having to fulfill seat time requirements, in blended and online courses; removal of caps on virtual schools and cyber charter schools as a driver for access and broadband in education.

Focusing on opening access through driving broadband for instructional purposes and increasing access for student learning through online courses and virtual schools. Just as Secretary Duncan in the Race to the Top applications gave priority and made a requirement for states to remove enrollment caps and open opportunities for charter school growth – the FCC should require the removal of state and district education agency enrollment caps and require laws that support cyber charter school growth as a key application and driver for broadband access for all students.

Recommendations:

- Support increasing broadband access to the home
- Support broadband pipes and networks that support any time, any place learning (do not require siloed pipes, K-12, home, higher education) if it supports K-12 student access to improved educational opportunities
- Prioritize including competency-based funding models, removing seat-time policies, where online courses that do not have seat-time can be funded as courses based on mastery -- as a driver for broadband in education
- Prioritize staff development for online and blended learning as a competitive priority in the grants to drive broadband in education

d. What creates demand for using broadband in education?

Answer: Expanding high quality K-12 online learning opportunities and dual-enrollment courses online are creating demand for broadband in education.

Students want to take courses online and surveys show that more than 40% of students are interested in taking online courses from schools systems and virtual school programs. In addition, many full-time virtual schools and cyber charter schools provide a computer and broadband access to the home for students and teachers. Virtual schools are a key driver for broadband demand and – virtual schools and online programs expand educational opportunity and access to courses and high-quality teachers online.

A national survey conducted by Gallup in 2006 showed that 47% of parents wanted their students to take an online course before graduation from high school. Harris Interactive in partnership with iNACOL conducted a national survey of middle and high school students that showed that more than 40% of students wanted to take a course online.

The K-12 online learning market is growing rapidly at 30% annually, and in 2008-2009 there were over 2,000,000 enrollments in online courses. Online learning provides new opportunities for students – in rural schools without licensed teachers, for diverse students with a range of needs, with specialized faculty to offer honors and Advanced Placement courses, serving home-bound students, providing credit recovery to struggling learners, and reducing scheduling conflicts through flexibility. These are just a few of the reasons students are asking for the expansion of online offerings.

Recommendation:

- Ensure E-rate is restructured to fund the networks and infrastructure that is distributed and support expanded networks for virtual schools and online learning programs that are drivers of broadband in education and expand access to students in rural areas.
- Coordinate with U.S. Department of Education to support and prioritize virtual schools and online learning across grant programs -- as a driver for broadband that provide solutions to the Administration's core goals: increase broadband access, improving academic rigor and standards, improving assessments and data, improving the quality and distribution of highly qualified teachers, and turning around the lowest performing schools.

BROADBAND AND DIGITAL CONTENT

3. We seek comment on schools' and school systems' online and digital content needs and uses, including content for student instruction (e.g., whole or partial textbooks or supplemental resources) as well as professional development content for educators.

a. What sets of instructional and operational problems are schools and school systems attempting to solve with online content solutions?

Recommendation:

- Learning beyond textbooks – making policy changes beyond textbook adoption in nearly half the states a priority for grants to improve the adoption of digital instructional materials, open educational resources and online courses.

A major problem in today's school systems is the lack of high quality connectivity to the Internet down to the "end user" inside old classroom models. Old metrics on connectivity to schools and classrooms from NCES Internet Access studies do not adequately reflect the local network usage demands and access requirements for mobile learning, virtual learning, and adaptive curriculum and assessments. Research shows "stand up talking is deadly for this group" of today's internet-savvy students.

Online learning helps provide the attributes that research shows students want and need to be engaged in education:

- Responsiveness and fast feedback
- Customization and interactivity when learning in a community where open, inclusive and diverse thinking is encouraged
- Project-based, team-oriented learning

Recommendations from Generation Learning Styles written by Julia Coates:

1. Develop online learning communities, online discussion boards, social networking for discussion and analysis.
2. Develop opportunities for experiential learning, field experiences, simulations and case method approaches.
3. Provide lots of structure.
4. Provide lots of feedback.
5. Use technology, blended classes and online learning.
6. Allow for creativity.
7. Recognize the need for social interaction and ultra-communication.
8. Allow focus time, reflection time and discussion time; Give these multi-taskers structure through course design.

Online learning provides a unique opportunity to customize and redesign courses for better teaching and learning – providing structure, feedback, interaction and increased discourse and discussions online.

Schools are creating, buying and using digital content to improve their face-to-face learning environments as well as to increase access for students to high quality teachers and content throughout the country.

For students, digital content and online courses are being implemented to allow students to access Advanced Placement and honors courses, to access highly qualified teachers for courses that aren't offered at their school, for credit recovery opportunities, and for students who physically cannot attend a brick and mortar school due to health issues and traveling. Digital content is also being implemented in face-to-face classrooms to supplement and differentiate learning.

In North Carolina, California and other states, colleges are providing dual-enrollment courses online for high school students that can take the course from their local high school and earn college credit. These programs help the students earn credit and become college ready, and are a major driver for broadband demand. E-rate does not easily support the needs to address K-20 connections.

Professional development offered through e-learning is a rapidly growing trend in school systems. Online classes and digital curriculum are increasingly offered by school systems for teacher professional development to reduce educators' time away from students during the school day as well as a way to save on travel costs.

b. Of the typical set of online content tools (e.g.,: content creation, content publishing, content indexing, content management, content search) what have schools and school districts experienced when making purchasing decisions about the quality and availability of tools that meet their needs? Are there areas where needs are consistently unmet or under-served?

In general, E-Rate does not provide adequate categories of funding for e-learning infrastructure.

Online learning programs in schools have heavy technology infrastructure needs from server capacity, to broader networks outside of buildings, to new models of professional services required to run technical aspects of virtual schooling.

In addition, schools are purchasing Content Management Systems to build online content and resources for their students and teachers. More and more companies are developing these tools and making it easier for teachers, trainers, and instructional designers to develop content in house.

Open Source tools are also becoming more widely available for schools, which helps reduce some of the licensing costs for schools. These tools can be adapted to meet the individual school or teachers needs by the community developers at a lower cost.

As an open resource, open educational resources and open courses are used, improved, and shared by communities of instructors, fueling ongoing innovation and efficacy of critical teaching and learning tools. OER are an ideal solution to the goals and guiding principles of the Administration. A one-time investment in OER creates a valuable teaching resource that is free for all individuals, and is maintained and improved by the community. There are no financial, social, or geographic barriers to access to OER.

Digital content and resources supporting online learning have been used by schools and instructors across the United States for measurable improvement in both instructor and student performance.

c. How is digital content being integrated with traditional textbooks and other materials? Are there issues preventing this integration?

Digital content can be used to supplement or replace the traditional textbook and classroom materials. Teachers can integrate the digital content into their face-to-face classroom teaching or use entire courses with the dynamic online content for learning beyond textbooks. Some schools are using online courses as the primary instructional materials in courses – enabling teachers to make the best of dynamic resources and interactions that take place within and outside of school walls.

Issues preventing the integration of digital content include limited access to the Internet and equipment to access the Internet and these resources. Not all classrooms have access to the Internet and computers limiting the option of using digital content.

Professional development for teachers on how to teach online and integrate digital content into their lessons is lacking as well. Colleges of Education and university teacher education programs and districts lack training for online teaching and most institutions are not offering this type of training for teachers. This is a huge barrier.

DIGITAL LITERACY

4. We seek comment on digital literacy programs, standards, and content.

a. Please provide case studies or data relating to the use of digital literacy training to improve access and use of online systems, and the educational, social or economic impact created by such work. Where has such digital literacy work been accomplished in a traditional classroom and where has it been accomplished in an online or blended model for developing these skills? What physical locations (if any) were used (libraries, schools, etc.)?

iNACOL has developed *National Standards of Quality for Online Courses* and *National Standards for Quality Online Teaching*. These standards have been used by various state education agencies and local school districts to implement training for teachers to teach in an online environment. States such as Washington and Texas have also adopted these standards to evaluate online course content, which will be used in their states.

The standards have also been used to develop professional development for schools on how to train teachers to teach in online and blended learning environments. Groups such as EDC and University of Wisconsin have developed trainings based on the standards.

iNACOL has developed a teacher training program for the VOISE (Virtual Opportunities Inside a School Environment) blended learning Academy within the Chicago Public Schools.

b. What barriers or issues have prevented implementation of such solutions?

Biggest barriers:

- Policies that focus on funding K-12 public education based on seat-time, rather than performance-based or competency-based funding
- Policies that limit teacher licensure reciprocity across states
- Policies that serve as de facto enrollment caps, such as limited access by funding that doesn't follow the student
- Lack of administrator and teacher training programs for online teaching and learning
- Lack of grants targeting educational reform and improvement through virtual learning solutions
- Lack of broadband

The barriers that have prevented the growth of access to the use of online systems include the lack of available teacher training programs. A handful of Universities and professional development organizations have created training programs for online teaching and course development, but most teachers do not have access to these courses based on their location and access to the programs.

The barrier of limited high-speed broadband and wireless access to technology and the Internet continues to be a major problem in education.

ONLINE LEARNING SYSTEMS

5. We seek comment on online learning systems.

a. Please provide examples of schools and school systems currently supporting blended online/offline instructional planning and delivery as well as distance learning via broadband and computer-based learning.

Online learning in K-12 education is growing at 30% annually, and Sloan reports that 70% of school districts offer online and blended learning. From Los Angeles, California to Clark County, Nevada to Omaha, Nebraska and Fairfax County, Virginia – school systems nationwide are turning to online learning and blended learning solutions. Examples of these can be found in the annual Keeping Pace report at www.kpk12.com. A few examples that can be found in the report are listed below.

Chicago Public Schools VOISE Academy is an example of a fully blended learning school. Students attend the academy face-to-face each day. All students are provided a computer and all of the content and curriculum are accessed through a fully digital curriculum. Students can work at their own pace, but still have the option of doing group work and having face-to-face discussions.

Alabama's ACCESS program is another example of blending learning. Each school has a 21st century classroom where students can access online content and highly qualified teachers throughout the state. Students have the option of taking a course fully online or in a blended environment, and all students are now required to take an online course as part of their high school graduation requirements.

Florida Virtual School is an example of a fully online program. All students in the state of Florida have the option of taking an online course through the FLVS, whether at their brick and mortar school or at their home. Students in grades K-12 have the option of a fully online education or to access only a single online course.

Omaha Public Schools for credit recovery. Like nearly all school systems in the nation, only about half of OPS eighth graders passed algebra 1. Traditional credit recovery courses (e.g., Summer School) resulted in 35% of students flunking for a second time. OPS turned to open courses to develop a new online credit recovery system. Not only has this approach saved the school system 72% of the cost of using a commercial online system, it allows more student to gain access. Now only 5% of students are failing thanks in part to the ability to continue their studies online and not being locked to the scheduled end of a traditional classroom course.

What online content systems (e.g., online text books, resource libraries, learning management systems (LMS), distance learning programs, student portfolio systems) have been successfully implemented?

As an international organization, we have seen several online content systems successfully implemented in schools, districts, and states throughout the country.

Companies such as Apex Learning, Connections Academy, Advanced Academics, K12, Kaplan, KC Distance Learning, and Odysseyware all offer full distance learning programs that can be adopted at the state or local level and have developed fully online courses that schools and states can purchase.

The Monterrey Institute for Technology in Education's (MITE) National Repository of Online Content (NROC) and their Hippocampus program along with Curriki are being implemented as Open Educational Resources (OER) in online and face-to-face classrooms. The most widely used high school OER content comes from the National Repository of Online Courses (NROC). A national membership organization of academic institutions, which work together to support and guide NROC. The membership includes 21 of the state departments of education and state virtual schools, as well as many of the nation's large public school systems such as Los Angeles USD, Minneapolis PS, Albuquerque PS, Clark County NV, and the Mid-Hudson BOCES.

Blackboard, Desire2Learn, UCompass, Brain Honey, and eClassroom as well as Moodle and Sakai (Open Source) learning management systems are successfully being used in the K-12 environment.

How do schools and school systems align online learning systems with other traditional instructional tools (e.g., textbooks, curriculum, scope and sequence)?

Semester and year-long online courses are aligned to national standards that have been created by the National Council of Teachers of Mathematics, National Science Teachers Association, and other content specific organizations. Several of the courses are also aligned to iNACOL's *National Standards of Quality for Online Courses*. Courses created at the local level usually must be aligned to the local and state standards of that specific state.

b. How do schools and school systems measure the effectiveness of online vs. blended vs. offline instruction? What are the benchmarks used to compare delivery approaches?

Several research studies have been completed to measure the effectiveness of both online and blended learning environments. In the 2009 *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies* by the U.S. Department of Education also showed that online learning is effective. "The meta-analysis found that, on average, students in online learning conditions performed better than those receiving face-to-face instruction."

A Synthesis of New Research in K-12 Online Learning found that online learning is "equal or better" than traditional face-to-face, lecture courses when based on student achievement. It reported, "one conclusion seems clear: On average, students seem to perform equally well or better academically in online learning." the primary reason that school districts offer online courses is to expand options for students.

Another major finding from *A Synthesis of New Research in K-12 Online Learning* was that training teachers to teach online "improves teaching" in online and face-to-face settings. These implications for online training to improve teaching strategies overall are an important finding: "teachers who teach online reported positive improvements in face-to-face, too. . . . Of those who reported teaching face-to-face while teaching online or subsequently, three in four reported a positive impact on their face-to-face teaching."

The iNACOL *National Standards of Quality for Online Courses* and the *National Standards for Quality Online Teaching* also provide standards and key indicators to measure the overall effectiveness of the content and teacher in both of these environments.

Online learning – the delivery of high-quality online courses – is considered by innovation expert and Harvard Business School professor Clayton Christensen as the most important "disruptive innovation in K-12 education." To summarize, online learning provides access to courses otherwise unavailable and creates a new distribution model to access highly qualified teachers in locations where there may be severe teaching shortages. Importantly, e-learning requires a significant shift in the teaching and learning

paradigm - away from the old Carnegie model of seat time toward a new, computer-mediated model, shifting time, types of resources and instructional support.

c. What barriers or issues have prevented implementation of such solutions?

A policy barrier such as funding by Carnegie units and seat-time requirements is the #1 barrier to online learning.

Credit recovery and some newer models of computer-based instruction have opened a new debate on the value of Carnegie Units or Seat-time requirements. iNACOL believes that seat-time requirement laws should be changed if we are serious about obtaining proficiency for our students to be competitive and successful in the work force. When the only option was for instruction to be delivered by the teacher in the classroom and all students had to move at the same pace, seat time worked for determining student progress and as a model to determine funding. Time based instructional practices have persisted because they easily aligned to the industrial age, where the majority of the work force were compensated for the time on job. Today's work is not as time-based as in the past. More and more employers are looking for quality outcomes -- any time, any place.

Mastery can and should become the yardstick to measure education and not seat-time. With mastery a student must demonstrate knowledge, understanding and skill. How long it takes a student to master a concept or complete a course is irrelevant in an individualized model. If the use of the Carnegie Unit is abandoned, then multiple pathways and a more customized form of education can take the place of the current mass education model. Student's continued education in a course of studies should be determined by more sensitive, embedded formative assessments. Technology gives us the capability of monitoring student progress and redirecting learning for individual students on a regular basis.

COMMUNICATION AND VIDEO SYSTEMS

8. We seek comment on implementation of other online applications in schools and school systems.

a. How have communication tools like instant messaging and online video conferencing supported instructional program implementation?

Schools are using some synchronous tools like instant messaging, Skype and VoIP tools such as Adobe Connect, Elluminate, Centra, and WebEx. These tools allow the student to instantly access their teacher to answer a quick question via text or to actually speak and share websites and interactive whiteboards when the student needs help. These tools also allow for interactive and engaging small group work.

Tools that support online learning as a solution for continuity of learning in the event of school closures due to natural disasters such as pandemics, H1N1 outbreaks, weather closures and earthquakes are an important consideration. Technology infrastructure is needed to build capabilities in academic continuity of learning through online learning across K-20 grades and institutions.

b. Where have live video streaming programs been implemented to scale?

Discovery Education provides video streaming educational content in Clark County, Nevada and more than half of the largest school systems across the United States at scale.

c. Where have social networking tools been implemented to support instructional goals?

Odyssey Charter School uses social networking tools to support instructional goals. The Virtual Virginia state virtual school also uses social networking tools to support instruction.

d. How have concerns of content appropriateness/content blocking been addressed in rollout to students (especially in kindergarten through grade 12)?

Online learning programs and cyber charter schools have implemented Acceptable Use Policies as part of the course. The key is to educate constituencies (administrators, educators, parents and students) how to access appropriate and reputable websites is normally provided as part of student's orientation to the course or program.

e. What single sign-on and identity management tools and approaches have schools and school systems used to ensure security and seamless user experience across online tools?

There are Chief Information Officers in school systems that work with vendors to try to find solutions to single-sign on needs, as well as Learning Management Systems that are integrating these tools into their systems.

COLLABORATION AND COMMUNITY SYSTEMS

9. We seek comment on implementation of collaboration and best-practice-sharing online systems. For example, we have been directed to a number of systems which demonstrate features of collaboration or online community capabilities including: www.curriki.org, www.nylearns.org, www.oercommons.org, www.schooltube.com, www.boepilot.org.

a. Please provide examples of successful online collaboration systems rolled out to educators and/or students. How have projects measured success?

The National Repository of Online Content (NROC) is another example of a best-practice-sharing online system. Virtual schools and online content providers collaborate to build interactive, engaging content, which can be shared with other schools around the world. The content is aligned to content standards and can be shared across Learning Management Systems. It is designed in teams and has a professional team working to ensure it maintains a high level of quality.

Several online programs including Florida Virtual School, Michigan Virtual School, the states of Illinois and Georgia, Omaha Public Schools, and the Clark County School District have all taken part in developing new courses and resources for NROC.

The IMS is also setting standards for interoperability and common cartridge for schools.

c. What subject matter(s) attracted the most use or were the most helpful for educators or students (e.g., instructional practice development, classroom management strategies, mentor/mentee relationships, administrative processes, student projects, and student research)?

iNACOL conducts a Needs Assessment for states, school districts, schools and associations to determine their needs for implementing online courses and training. iNACOL data shows that Algebra I is the course with the highest need for schools. The next most needed course in schools is Biology. Most middle and high school math and science courses are in high need. This reflects the reality of teacher shortages in math and science -- and the need for online courses to provide a new delivery of these courses with highly qualified teachers to schools that can't offer these courses because of shortages of staff.

In terms of professional development, how to teach online and to integrate digital content remain the highest needs for teachers.

INNOVATION IN BROADBAND AND ONLINE SYSTEMS

10. We seek comment on opportunities for government to support innovation in the education technology sector, both in terms of driving innovative program and product development, as well as driving adoption.

a. What are the opportunities for government to support technology literacy, access to devices, and adoption through school-based programs for students, their families, and their communities?

The government can support funding and supportive policies to increase opportunities for students to access online learning by expanding broadband access to all communities in the country. Also providing grants to support a holistic approach to technology infrastructure – from supplying the computers to allow students, teachers, and community members to access the content to supporting the professional development focused on online teaching -- would allow more students to access a world-class education regardless of their zip code and/or socio-economic status through online learning.

Lack of teacher professional development is a major opportunity for the government to focus on supporting innovation. Only a small number of universities provide these opportunities in their pre-service teacher education programs. The majority of school districts do not have access to these professional development courses and need help training teachers to access these new digital resources and content.

b. What are the opportunities for government in setting technology standards?

Host convenings to identify areas that need government assistance with technology standards and provide grants to appropriate entities to take the lead on standard-setting (such as non-profits and universities in partnership with states and districts).

c. What are the opportunities for government to drive innovation in schools and school systems?

In order to develop innovation in schools, the government must require the removal of policies at the state and local level that are barriers to K-12 online learning, including seat-time attendance policies. Policies need to be revised for the 21st century to allow for a competency-based learning model rather than the forced, time-based education model.

Regional Accreditation organizations also need to revisit their accreditation standards to allow for each individual student to demonstrate proficiency of the standards at their own pace to ensure all students are successful. Grants to states and accrediting agencies to move toward competency-based policy models would be helpful.

The U.S. Department of Education should convene a national conference among the regional accreditation groups and state policymakers to generate consensus on alternative national accreditation criteria and mastery-based funding policies for online and blended learning opportunities.

d. What are the opportunities for the government to support research and development to drive innovation to the education technology market?

The government can support more in-depth research into successful online and blended learning environments. Some research has been done on comparing face-to-face versus online environments, but what attributes and pedagogies allow for students to be more successful in these learning environments under different models and instructional approaches?

E-RATE MODIFICATIONS

11. As part of the national broadband plan, we seek comment on how the Commission can modify the E-rate program to more effectively meet the needs of applicants as well as whether the program can be a vehicle to stimulate the adoption of broadband throughout communities. For example, in Portugal researchers have found that the usage of broadband in schools creates a “spillover” effect that leads to greater broadband adoption in the community as students increase their Internet usage at home and transfer their technology skills to other family members.

a. Currently, schools and libraries may obtain discounts on various services that provide highspeed access to the Internet as telecommunications and Internet access (priority 1) services. We are aware that applicants may characterize their funding requests according to terminology used on the eligible services list, such as DSL,

“internet access via cable modem,” ATM, frame relay, T-1, T-3, Ethernet, OC-3, OC-12, ATM, “internet access via fiber optics,” etc. We seek information that would enable us to better understand at a more granular level what broadband services eligible applicants are buying today. Overall, what percentage of priority 1 funding is subsidizing broadband services at what speed levels, and what percentage is subsidizing basic voice service (wireline or wireless)? Can we segment the applicant community that receives discounts on higher capacity broadband services based on specific characteristics (such as number of students, rural vs. urban, discount level, etc.)?

From iNACOL’s perspective, the critical question is what kinds of schools have a driving need to use online learning to meet educational challenges, and which of those experience lack of broadband technology as a barrier to effectively using online learning. We know that more than 40% of high schools – particularly those serving rural, low-income, and minority youth – do not offer any AP courses, according to the US Department of Education, while only 44% of high school students in the U.S. studied a foreign language in 2002. In the latest Sloan Consortium report, 75% of schools and districts said they need online learning to offer courses not otherwise available; 70% are looking to online learning to offer Advanced Placement or college-level courses; and 60% need online learning for credit recovery. At the same time, nearly one-quarter of schools and districts in the Sloan-C study say that their schools lacked the connectivity and infrastructure to effectively offer online learning. The urgent need for online learning is intensifying the broadband digital divide.

b. When applicants develop their technology plans, what factors do they consider in determining their bandwidth needs?

Applicants need to consider real bandwidth needs and loads when every student enrolled is accessing high quality online courses, streaming video, interactive tools and technologies that utilize artificial intelligence, digital content, communication and collaboration tools – all simultaneously for the end user. Simply measuring whether a school building or a classroom has an Internet connection (of any quality/bandwidth) is not nearly sufficient. Measuring bandwidth capacity to the end-user (under heavy loads) on the pipes is key.

c. We seek comment on program modifications to maximize the use of broadband connections that are subsidized by the E-rate program. Recognizing that the statute requires that discounts be provided on services used for “educational purposes,” we seek information on whether, and if so, how, past interpretations of the “educational purposes” requirement have restricted demand aggregation at the community level to support higher capacity broadband. For example, the program could be modified to allow for use of broadband facilities at schools by the general community, rather than just by school faculty and students. We seek specific examples of whether and if so, how, expanding the permissible use of E-rate supported services could confer benefits to a larger community or encourage partnerships with private or public organizations to pool resources to maximize broadband utilization. What practical

or operational impact would such a change have?

iNACOL hears from its members that narrow interpretations of “educational purposes” do impose artificial and counter-productive constraints on use of broadband connections subsidized by E-rate. For example, school districts serving small rural communities often have the only broadband Internet access available locally, but may not use Internet access purchased with E-rate funds for adult education, community informational purposes, or government/civic activities. These schools must either deduct those uses from their E-rate requests or simply not provide access. “The pipe is sitting there after hours and I don’t see why it shouldn’t be used by the community,” is how one district technology coordinator puts it.

As noted above, the prohibition on use of E-rate funds for Internet access from home by students also undercuts the effective utilization of broadband infrastructure investments by the K-12 schools. Students involved in online learning should benefit from the flexibility of time and location that online learning provides, rather than being paradoxically restricted to the brick-and-mortar building for such use.

The 21st Century demands that lifelong, “anywhere anytime” learning become a reality for Americans, and the E-rate should reflect this imperative while maintaining its core focus on K-12 education. iNACOL recommends allowing K-12 schools to aggregate demand from community partners – including adult education programs, cooperative extension programs, civic and community information providers, and K-12 and higher education end users – and reflect this on their E-rate applications.

d. We seek comment on any legislative changes that would expand the classes of eligible users. For example, the statute currently limits E-rate support to elementary schools and secondary schools, which are defined by each individual state. What would the impact be of modifying the statute to permit colleges, community colleges, pre-kindergarten, Headstart, or other entities to participate in the E-rate program?

While K-12 educators are fully committed to the vision of “lifelong, anywhere anytime learning” described above, there is concern about broadening the pool of independently eligible users of E-rate services until the program has truly fulfilled the mission of providing broadband infrastructure to K-12 schools and libraries. However, allowing K-12 schools and libraries to add higher education, pre-K, and community partners to their E-rate applications at their discretion would maintain the appropriate focus of E-rate while leveraging the program’s impact. To encourage such partnerships at the local level, the E-rate program could consider heightening a K-12/library applicant’s eligibility status if it can demonstrate that it has such partnerships in place.

e. To what extent does the fact that the E-rate program does not currently fund computers and other end user equipment inhibit the use of broadband by schools and libraries? Likewise, to what extent does the fact that the E-rate program does not currently fund training for teachers or librarians in the use of technology inhibit the use of broadband by schools and libraries? We seek specific information

regarding what types of services are not available to teachers, students and library patrons due to lack of funding for end user equipment and training. If the E-rate program were to fund computers and training, what would the projected demand be? From a policy perspective, what are the potential negative consequences if such a change were adopted?

Part of the E-rate's great challenge is the same challenge schools have: how to stay current with rapidly evolving technology, avoiding obsolescence, addressing today's needs while keeping one eye on tomorrow. Since the E-rate was launched, the changes in end-user equipment have been astonishing, most recently in the evolution of cloud computing and powerful mobile devices. Online learning providers and practitioners are scrambling to keep up with all of the opportunities these new technologies represent, and yet schools too often must under-utilize their E-rate funded connectivity because the end-user devices they have are fundamentally incapable of taking full advantage of the pipes and content available. Having the ability to invest some E-rate funding in cutting edge access devices – not traditional computers, necessarily, but equipment specifically designed for taking advantage of broadband access – would help schools escape this obsolescence trap.

Much more critical is the teacher training question. Without effective integration of technology into teachers' practice, the real value of broadband connectivity to schools will not be realized. Students will continue to see their schools as bereft of technology, no matter how many pipes and boxes there are. Many iNACOL members believe that the very act of learning to teach a course online is the most effective technology professional development experience a teacher can have, regardless of whether that teacher will ultimately teach online long term or not. As the technology drives toward blended learning and mobile learning, and as virtual education emerges as a solution for continuity of learning in a pandemic situation, having teachers who know how to make best use of their broadband resources is essential. Allowing schools and libraries to devote a set portion of their E-rate funds toward such effective professional development would be a wise investment.

f. Currently, WANs are not eligible for support “to the extent that states, schools, or libraries build or purchase a wide area network to provide telecommunications services.” Would modifications to this rule regarding WANs, which link schools and libraries within a district or link several school districts together, result in greater broadband deployment?

As discussed above, current E-rate rules artificially isolate school buildings when the natural tendency of broadband Internet is to connect. Wide area networks of various kinds, including wide area wireless networks, make efficient use of connectivity and promote the kind of “anytime, anywhere, lifelong learning” that ultimately our nation and economy need to survive. Allowing schools to develop these networks for their communities or to benefit from their development should be a forward-looking priority for the E-rate.

g. Are there any programmatic rules and policies that have the effect of deterring requests for broadband funding? For instance, we understand that some libraries have suggested that compliance with filtering requirements under the Children’s Internet Protection Act represents a deterrent to program participation. Are there other statutory provisions or Commission rules or policies that may reduce program participation by entities that otherwise would utilize discounts on broadband services? Commenters should be specific in identifying which current rules may create barriers to broadband deployment.

iNACOL has heard multiple examples from the library and school community that small applicants find the CIPA requirements too great a burden to make the E-rate worth pursuing. In addition, while robust online learning applications are unquestionably a demand driver for broadband implementation, schools often find themselves in a “chicken and egg” situation. Without broadband, they have no ability to use leading-edge interactive, media-rich learning applications; and without such applications, they can’t justify their need for higher-speed connectivity. One elementary school in an urban mid-Atlantic city faced exactly this dilemma this past summer when contemplating a blended learning pilot for several grade levels: though the project required upgraded connectivity to the building, equivalent of a second T-1 line, the district technology team was disinclined to upgrade the school because its demand was traditionally low! Allowing schools to break this cycle with E-rate projects that integrate broadband, end-user devices, content, teacher training and partnerships is critical to achieving broadband penetration goals.

h. We seek comment on these ideas and on other suggestions for changing E-rate eligibility to improve broadband deployment.

Recognizing virtual public schools as schools – regardless of where physically the learning takes place – would be a critical step forward for the E-rate.

E-RATE DISBURSEMENT

12. We seek comment on how changing the E-rate disbursement and discount methodology might maximize the deployment of broadband.

a. One possible modification would be to create a new priority level for schools and libraries that do not have broadband or that have extremely slow Internet speeds to permit those entities to receive funding in advance of other eligible requests, which could enable such entities to “catch up.” An alternative would be to provide increased E-rate discounts for entities that wish to implement certain levels of connectivity. We seek comment on other methods by which the Commission could implement such changes, if they were proposed.

Allowing higher priority for both “catch-up” and “fast forward” applicants makes sense in the context of an overall drive toward universal broadband.

Schools and libraries that are lagging in terms of connectivity need to be encouraged to apply, which may mean creative strategies for addressing internal connections issues and

other barriers to broadband implementation. Helping these applicants leapfrog over a decade's worth of technology development to embrace newer, wireless, multifunction connectivity is a challenge not unlike that faced successfully by many countries in the developing world – assuming the E-rate rules would allow it.

At the same time, providing priority to schools and libraries who want to push toward the cutting edge of connectivity – and who can demonstrate that they have teachers and educational uses ready to make the most of more broadband – would create models for improving practice.

b. Currently, the program's funding varies for applicants based on the number of their students who qualify for free or reduced lunch and based on their geographic location. Using this measure, discounts range from 90 percent to 20 percent of the pre-discount price for eligible services, with the poorest schools receiving funding to pay for 90 percent of eligible services. Some rural schools receive additional discounts. The Commission could recalculate these E-rate discount levels to factor in not just poverty and whether the school is located in a rural area, but also whether the entity lacks broadband services. In addition, the Commission could change its priority structure to give preference for those schools that have not received funding for internal connections in several years. We seek comment on the extent to which schools that have not received funding for internal connections (Priority 2 funding) need to improve their internal connections in order to most efficiently use their broadband connections now and in the future.

Please see answer to b., above. Lagging or outdated internal connections and other barriers to keeping up with broadband connectivity must be addressed before schools and libraries can effectively take advantage of broadband. But the E-rate program must be wary of investing more resources where thinking is outmoded and leadership is lacking. Both “catch up” and “fast forward” applicants must demonstrate their ability to put broadband to work immediately improving education for students.

c. To what extent have current rules inhibited the development of or expansion of existing state, regional or local broadband networks? Are there changes to the Commission's rules that would facilitate these types of networks?

The WAN restrictions and the ineligibility of certain categories of users to benefit from K-12 driven broadband improvements have inhibited local and regional networks. At the same time, the general reluctance of the E-rate to embrace newer forms of connectivity and new uses has discouraged innovation on the part of some state education networks, sharply separating those working on network issues from those developing online learning resources.

d. If the Commission established a national broadband goal for schools or libraries, what effect would that have on demand for E-rate funding?

If the Commission coupled its national broadband goal for schools and libraries with recognition of the kinds of learning those institutions seek to offer now – online, mobile, distributed, blends – the demand for E-rate funding would increase, but so would the educational effectiveness of the E-rate investment.

e. We seek comment on these issues as well as other ideas to modify E-rate disbursements and discounts to maximize the deployment of broadband.

Please see answers above.

E-RATE FUNDING

13. We seek comment on the implications of modifying E-rate funding to support additional broadband deployment and how changes to the E-rate program would improve the ability of the program to meet applicant needs for broadband.

a. To what extent does the annual E-rate funding cap of \$2.25 billion limit the extent of broadband deployment by eligible schools and libraries? What are the financial or programmatic implications of increasing the cap to fund additional services not currently covered by E-rate? What are the implications of indexing the cap to inflation? Would there be specific implementation issues that would arise related to such changes?

iNACOL members agree with astute observers of the education technology arena that the E-rate cap needs to be raised in order to cover the current costs of connectivity, but more pointedly internal connections. The overall limits of funding have put infrastructure (Priority 2) projects out of reach of many districts, even the neediest.

b. To the extent the Commission modifies its E-rate rules to encourage additional requests for funding for broadband services under priority 1, how would that change likely impact the availability of funding for priority 2 services?

Since funding for Priority 2 services is already severely constrained, encouraging additional (and presumably deeper) requests for broadband funding under Priority 1 would likely further shrink the Priority 2 pool. The constraints on Priority 2 availability have already had a chilling effect on applications for services in that area, which – as discussed above – ultimately hampers schools' ability to use broadband effectively.

c. To the extent that commenters believe that providing additional funding above the current cap would advance broadband deployment, we seek comment on what additional amounts would be needed to achieve specific levels of broadband connectivity. Commenters should identify all assumptions regarding their dollar estimates.

While iNACOL does not have a specific dollar amount to recommend in terms of additional funding above the current cap, proposals by some in the field to raise the cap to \$3.03 billion annually simply as a reflection of inflation seems an intelligent starting point for this high-priority effort.

d. The Commission could decrease the discount levels for basic telecommunications, or otherwise modify the existing discount levels, to increase the amount of E-rate funds available for broadband deployment. What would be the effect of such a change?

The impact of decreasing discounts for basic telecommunications (or POTS, plain old telephone service) in favor of increased broadband would likely have the effect of driving more schools and libraries toward voice-over-IP solutions. This would actually have advantages for online learning, in that voice interactions between teachers and students could be facilitated within courses rather than requiring separate equipment and service.

e. Would eliminating some of the services currently eligible and expanding eligibility to other services result in greater levels of broadband connectivity? Commenters should specifically articulate how proposed changes in the eligible services list would enable greater broadband deployment.

iNACOL believes that expanding eligibility of online learning-related services – including learning platforms, web conferencing capabilities, curriculum content, teacher training, and end-user devices – would do more to drive broadband connectivity demand and usage by K-12 education than any other step the Commission could take.

f. What other costs not currently covered under the E-rate program would be incurred if schools and libraries could purchase additional broadband capacity? Would schools and libraries have to upgrade personal computer equipment, internal wiring, servers, and other hardware?

As noted above, internal connections as well as expanded wireless capability must be adequate to ensure that the broadband connection is usable where students are learning. End-user equipment must be available to facilitate flexible, mobile access. Ideally, the definition of a “school” would be broadened beyond outmoded concepts based on physical buildings to encompass true distributed distance learning. In essence, K-12 education needs assistance from the E-rate and beyond to catch up with how and where students learn in the 21st century.

g. Additionally, we seek comment on suggestions for coordinating with federal or state agencies on grant programs that could supplement the Commission’s E-rate program. For example, the United States Department of Education’s Enhancing Education Through Technology State Program (Ed Tech) provides grants to state educational agencies to improve student achievement through the use of technology in elementary and secondary schools. Money from grants such as this, in combination with E-rate funds, could greatly increase a school’s broadband

connectivity.

Without question, coordination of programs, including EETT and the various stimulus grants will allow this investment in technology to multiply. In addition, funding for school reform in general – for teacher quality, performance-based learning, world class standards – can and should be leveraged to support online learning. Some states are very effective in assisting schools to leverage and combine these resources, while others treat the overall pool as a zero-sum game, providing disincentives for collaboration and innovation. In addition, neither the US Department of Education nor the states has sufficiently embraced the potential of online learning as the leading educational technology application worthy of significant cross funding. The transformational power of online learning still remains largely untapped.

h. Alternatively, E-rate funds could be used in conjunction with funds from other entities to support broadband projects. For example, upon a state’s recommendation, a particular project might be funded by having the state pay for the computers and training, and providing E-rate discounts for the broadband connection. Are there other specific ways the Commission could better leverage the benefits of E-rate funding through coordination with other federal, state, local or non-profit programs that seek to advance broadband deployment?

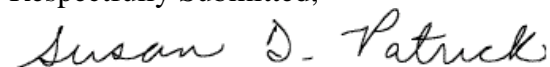
iNACOL supports any approach that expands world class learning opportunities for students and leverages technology infrastructure for anywhere, anytime learning.

i. We seek comment on these suggestions and other ideas to increase the amount of E-rate funds available for broadband technologies, or to more effectively use E-rate funding to improve broadband deployment.

iNACOL believes that smart investment in online learning and the broadband technology that facilitates its use will result in better education provided more cost effectively for students throughout the United States. A shift of just a portion of today’s education spending toward these imperatives will more than pay for itself in terms of a stronger economy and a brighter future for our nation.

Thank you for considering iNACOL’s comments. We thank you for remembering the important role that schools play in the future of our country and in driving demand for broadband in all communities.

Respectfully Submitted,



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