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TECHNOLOGY AND EDUCATION: A REVIEW OF FEDERAL, STATE, AND PRIVATE SECTOR PROGRAMS

HEARING

BEFORE THE

SUBCOMMITTEE ON TELECOMMUNICATIONS AND THE INTERNET

OF THE

COMMITTEE ON ENERGY AND COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTH CONGRESS

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TECHNOLOGY AND EDUCATION: A REVIEW OF FEDERAL, STATE, AND PRIVATE SECTOR PROGRAMS

THURSDAY, MARCH 8, 2001

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ENERGY AND COMMERCE,
SUBCOMMITTEE ON TELECOMMUNICATIONS
AND THE INTERNET,
Washington, DC.

The subcommittee met, pursuant to notice, at 10 a.m., in room 2322, Rayburn House Office Building, Hon. Fred Upton (chairman) presiding.

Members present: Representatives Upton, Gillmor, Shimkus, Wilson, Davis, Terry, Tauzin (ex officio), Markey, Rush, Eshoo, Engel, Green, McCarthy, Luther, and Sawyer.

Staff present: Will Norwind, majority counsel; Howard Waltzman, majority counsel; Robert Simison, legislative clerk; Cliff Riccio, legislative analyst; Andy Levin, minority counsel; Brendon Kelsay, professional staff.

Mr. UPTON. Good morning, everyone. We do like to start on time, and I know Ranking Member Markey is on his way. We have had a little competition here, who owes who for being late, because we are now even.

I would like to just say a couple of things before I give my opening statement. We are in session now. There are many of us on a number of different subcommittees. I serve on five subcommittees, and other hearings are going on in our Energy and Commerce Committee as well, so members will be coming in and out. And we are also expecting a number of votes both this morning and this afternoon, so there will be plenty of time for coffee breaks, if you know what I mean. But we will get started and see how long we can go before we come back.

As chairman of this subcommittee, I have shaped my agenda on several broad themes, not the least of which is how technology can improve people's lives. Just a few weeks ago, I launched my own Leave No Child Off-Line tour in my District, which included a teleconference with over 500 high school students and 11 different schools, followed by a visit to a public-private partnership between Cisco and one of my local school districts.

Cisco Systems networking program does prepare students for the 21st Century workplace, while serving as a valuable model for e-learning. Many graduates of the program have gone on to high-pay-

ing jobs in the technology field, and I can say without a doubt technology is indeed improving these kids' lives.

The goal of today's hearing is to paint a broad picture of what investments in technology and education are being made in the United States on the Federal, State and local and private sector levels. As such, this hearing is designated to get at the facts about what a representative sampling of the programs are, how the programs work, who benefits from the program, and what levels of funding are associated with such programs.

I am particular proud that the State of Michigan is represented here today. Governor Engler has made technology and education a top priority, and his initiatives are a tremendous value to the students and teachers of my State.

While today's witnesses are but a representative sample, it is my hope that we will come away from this hearing with a deeper understanding and appreciation of the value of technology and education and the tremendous investments made at all levels of government and the private sector through public-private partnerships.

As Federal legislators, it is important to note that the E-rate is but one, albeit significant, technology and education program which falls within our committee's jurisdiction. There are relatively smaller programs through NTIA like the TOPS program, that also fall within our committee's jurisdiction, not to mention programs through the Department of Commerce and Department of Education within our committee's jurisdiction.

In addition, I want to recognize another Federal technology and education issue within our committee's jurisdiction, the Instructional Television Fixed Service, ITFS, which, I can assure, while not within the scope of this hearing, is very much in our subcommittee's radar screen as our nation grapples with spectrum management issues.

In closing, I want to quote the inspirational Mario Mariano, who said that "with technology and education, we have a remarkable opportunity to attack problems that have plagued us for so long, but we must think in new ways, apply new approaches, and do more to bring people and resources together to advance a common purpose to help young people grow up with hope, personal responsibility, and the opportunity to lead meaningful and productive lives. We must ensure that these young people avoid becoming the illiterate of the 21st Century, not only unable to read or write which itself is a serious challenge, but unable to learn in a fast-changing adoptive world that requires nothing short of a fundamental change in how we intervene, develop and educate young people."

This is not news to our witnesses today, who have committed so much to improving kids' lives through technology and education, and I look forward to hearing from all of them. With that, I recognize my good friend—and now even in the score—the gentleman from Massachusetts, my friend, Ed Markey.

Mr. MARKEY. Thank you, Mr. Chairman, very much. You know, whenever you are passing legislation for big, multinational companies, that is your best opportunity to do something for poor people, ordinary people, because they want this big thing so badly.

And so when we were doing the Telecommunications Act back 5, 6 years ago, this presented itself as a tremendous opportunity. In other words, the CEOs that sat at that table were telling us that they were going to, if freed from restrictions—cable, telephone, satellite, et cetera, down the line—that they would so rapidly speed up the technology revolution, that they would so rapidly expand the American reach across the globe, that we would become Number One, looking over our shoulders at Number Two and Three in the world.

But, of course, if you are going to do that, then you have to have a way of ensuring that you are going to give a concomitant skill set to the young people in the country so that they qualify for those jobs. Otherwise, we will be besieged in this committee and across Congress with requests for thousands of additional H1B visas each year to come into our country to fill up these jobs because we do not have enough Americans with the skill set.

So, in my District, in my hometown, which is largely minority now—Walden, Massachusetts—we have 67 languages spoken in my public school system. And, yet, in addition to Social Security requests and veterans' requests, the largest requests that I am now receiving from companies in my District is for H1B visas to bring in trained people from the very same countries that these children come from. But, of course, the children come from the lower part of the socioeconomic spectrum in those countries, and the H1B visa recipients come from the higher economic spectrum. So, they are all from very smart stock except, because of socioeconomic circumstances both there and here, they were not being given a shot. And by the year 2030 in the United States, 50 percent of all children will be minorities—50 percent will be minorities—minorities no more, by the way.

And so if we want a trained workforce that is going to have the capacity to have good jobs and good incomes so that we can all retired on Medicare and Social Security without having out benefits cut, we have to train these kids now.

And so the thought behind the E-rate was quite central, and we built it into the 1994 Act out of this subcommittee. I built in this discount rate, Jack Fields and I, a discount rate, we called it. And then I called it the "E-rate". We call it the "E-rate" here on the committee. I was going to call it the "ed-rate", I thought that would go too far, Mr. Chairman, but the E-rate. And it is really meant to say that in a post-GATT, post-NAFTA world, that you have to ensure that the kids get the skillset.

And so the formula is skewed in a way that benefits those kids who are in the most need because, when the phone bills are paid for, then those parents and those teachers in school systems that otherwise were not moving, now have basically an argument they can make to the rest of the school system—why don't you move faster? Why don't you take advantage of this? Where are the computers? Where is the teacher training? And so you empower those parents, you empower those teachers.

Now, obviously, I was very disturbed that President Bush was considering block granting the E-rate, putting it just back into the general pool of money. Now, the reason I am concerned about that, obviously, was all of the Governors and all of the States over all

those years had plenty of opportunity to help this kids, but they weren't doing it. And so this was a special program targeting them, using telecommunications policy.

So, I was heartened yesterday when I heard Secretary Page say that they are now starting to move in a different direction, and that is good news—excellent news—because I think they are beginning to get educated about this program and how successful it is.

It is an excellent program. It is telescoping the timeframe that it is taking in order to ensure that every child, regardless of income, regardless of race, regardless of the language spoken by their parents in their homes, gains access to this skillset.

And so that is part of the deal, in other words. We can't move forward as a nation unless, as we are doing something for big business, we are doing something for ordinary people at the same time. Otherwise, it is not a policy because you are not ensuring that the rest of the Nation is, in fact, able to take advantage of it.

And so it is not just the bottom line of corporations that really determines whether or not our policies here are successful, but whether or not every American is a success. We just don't one company's picture on the cover of Forbes or Business Week and say that is a success, only when the picture of the United States is on the cover of every magazine in the world, knowing that all of our people have benefited, are we a success.

So that is what the E-rate is all about, and it is one of the great success stories of the 1990's, and when we look back we are going to realize that it was one of the great engines which gunned our people, making it possible for them as families to begin to contemplate, not looking over their shoulder in a rearview mirror at ancestors and their jobs which are leaving their communities, but looking forward through the eyes of their children in terms of the possibilities, the opportunities that are going to be presented to them.

So this is a great hearing, Mr. Chairman, and I hope that in the years ahead we can continue to bring in even more witnesses to help demonstrate how successful this program has been. I thank you for having it.

Mr. UPTON. Thank you. Mr. Davis.

Mr. DAVIS. Thank you, Mr. Chairman. Mr. Chairman, one of the most important technology issues that have confronted the Congress in the past few years have shared a core commonality. The have illuminated the need for policymakers across the Nation to rethink the role of education in an age where information, how you access it, how you use it, and how you disseminate it is the key to a driving economy.

Legislation we enacted last year to increase the number of H1B visas, for instance, provided a short-term bandaid solution for a long-term structural problem, and that is the need to transform the outdated educational systems that keep all learning within a classroom into an approach that promotes learning and teaching both within and outside the physical classroom through the use of technology.

I commend the chairman for giving us the opportunity today to gain a more thorough understanding of the role of technology in

education and to find out what is already working across the country to improve the knowledge and skillsets of our children.

I am especially pleased to welcome from my District, Daniel Domenech, the Superintendent of the Fairfax County Public School System, where 147 native languages are spoken in the schools, and where my two younger children attend public school. It has been my pleasure to know Superintendent Domenech for a number of years now and, Mr. Chairman, may I say that I can't think of a better choice for a witness who can really help us understand what is possible when local communities band together to improve the welfare of our children.

A native of Cuba who came to this country at the age of 9, Superintendent Domenech has achieved a diverse career through his teaching, work in minority communities in Queens, New York, to his administrative roles in other multiethnic areas of New York, and now in Northern Virginia, where one out of five adults over the age of 25 was born in a foreign country.

He has achieved tremendous success with bringing technology to the classroom through public-private partnerships in Fairfax County, and I look forward to hearing his testimony today, along with the other distinguished panelists.

Most of us agree that we have a duty to improve the ability of future generations to compete and succeed in a global economy. We do know that there is a scarcity of skilled Americans who are able to fulfill the demands of a technology-driven economy, and that obstacle is only growing exponentially as our working population ages.

While we may not all agree on a single solution, our time will be well spent today in hearing how newly implemented programs are working toward eliminating that obstacle. Thank you.

Mr. UPTON. Thank you. Mr. Sawyer.

Ms. MCCARTHY. I believe Mr. Sawyer is acknowledging in the order, although he does outrank me.

Mr. UPTON. Ms. McCarthy.

Ms. MCCARTHY. Mr. Chairman, this is a spectacular panel, and I am going to submit my remarks for the record because they know a lot more than I do and I want to hear from them. So I would like to yield back my time.

Mr. UPTON. Mr. Sawyer.

Mr. SAWYER. Thank you very much, Mr. Chairman. I have also a longer opening statement that I am going to forego. Just let me add to what Ed Markey had to say, however.

I really believe that it is arguable that the decision that transformed the 20th Century was one that is comparable to some of the decisions we have made in the last 5 years of the century, and that was the recognition that the expansion of the railroads west represented a growth in this country that needed to be met with a concomitant elevation of the skills of this nation all across the acquired skill spectrum.

The last time we really had to do that was then, we have really made incremental since then, but today we face that very same challenge that was met by Justin Morrow a century and a half ago in the first enactments and the subsequent enactments of the Land Grant Colleges Act which took the expansion of the railroads west

and set aside the dollars in order to transform higher education and, in so doing, changed America in very fundamental ways.

We face the challenge of engaging a similar opportunity in ways that will call on a level of wisdom that many of us don't really call on frequently enough. It will call on us to raise our sights and alter our assumptions about where we are going.

And that, Mr. Chairman, I am pleased to insert my formal statement in the record and to request unanimous consent to insert Mr. Dingell's statement in the record since he is unable to be here.

[The prepared statement of Hon. Tom Sawyer follows:]

PREPARED STATEMENT OF HON. TOM SAWYER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO

Thank you Mr. Chairman and Mr. Markey for calling this very timely and important hearing on Technology and Education. As a teacher and the husband of a 30 year teaching veteran, I am keenly aware of the educational challenges we face as a nation.

Everyone should have the opportunity to learn and thrive in our community. We should make it our responsibility to ensure that everyone is able to read and write to the best of their abilities. Yet, in the information age, good reading and writing skills must be accompanied by some technical skills. Without these, the haves and the have-nots will be divided by more than just literacy, they will be divided by digital literacy. These are the new basic skills, which are essential for workers who want to take advantage of the rapid pace of change and growing complexity of the global economy. These are the skills we need to teach our community, and the places to teach these skills are in our schools and community centers.

Successful First Step: E-Rate

The E-rate is a good first step in bridging the digital literacy divide. There is currently a digital divide separating our community along geographical, monetary and ethnic lines. Regardless of these factors, every child in our country should have access to the Internet and its resources. The E-rate program has helped more than 80,000 schools and libraries get on-line by providing telecommunications services at a discounted rate.

This program is an excellent step toward bridging the digital divide, but at it's current funding level, it is not enough. In it's third year, funding requests for the program are estimated at $4.72 billion. However, the FCC has maintained its $2.25 billion ceiling for funding commitments to the program. Until every school in the United States has had an equal opportunity to receive these funds and is able to provide their students with access to technology, the E-Rate's work is not finished. I question whether the E-Rate should be combined with the Technology Literacy Challenge Fund or block granted while it is still being effectively used by our educators.

Another valuable resource for schools is the Technology Literacy Challenge Fund. Written in Title III of the Elementary and Secondary Education Act, it provides formula allocations to states for the purpose of improving technology access, education, professional development, and instruction in elementary and secondary schools. Funds are awarded to local educational agencies on a competitive basis within each state. The Challenge Fund's FY2001 appropriation is $450 million.

Beyond E-Rate: The New Challenge

There are other important issues that must be addressed in order to bridge the digital literacy divide and make technology an equitable and useful tool for our educators. First, we need to find a way to provide *hardware* for our classrooms. Second, we need to provide *upkeep* of the technology in our schools, to ensure that our children are not learning on out-dated and impractical technology. Third, we need to train our teachers on the use of technology how to *train our teachers on the use of technology and how to integrate it into their curricula. Instead of teaching our children how to use technology, we should teach our children using technology.*

Kent State Is Bridging This Divide

In my district, Kent State University is working to further bridge this digital divide through its Research Center for Educational Technology (RCET). RCET provides a network for pre-kindergarten through college level educators and university researchers committed to studying the impact of technology on learning.

One place that RCET conducts research is in the Ameritech Classroom, located at Kent State University. The classroom serves as the learning environment for a class of students and their teacher, who conduct class in the classroom for half days over a six week period of time. Teachers bring their own class and their own curriculum. The Ameritech classroom provides assistance to the teachers, so that they learn to integrate the classroom's technology into their curriculum. RCET observes the children and the teachers, to study the impact of technology on teaching and learning. To date, more than 70 teachers and nearly 1000 students in grades K-9 have participated either directly in the program, or indirectly through workshops and outreach programs.

Programs like RCET and the Ameritech classroom are researching ways to effectively use technology as a tool to educate our children, while the E-Rate is providing the funding source to bring telecommunications into our classrooms. These programs are working to create an educational environment where all children are able to become digitally literate, but there is still more to be done. We need to take the next step toward bridging the digital divide and find a way to fund the necessary hardware for our classrooms, the upkeep for this hardware, and the training of teachers in the use of technology.

Beyond K-12: Current Workforce Training

While we are considering possibilities for technology and education, we should widen the scope of our initiatives to address digital literacy within the current workforce.

One-Stop Career Centers provide valuable resources to workers in search of a job. Yet, with the severe shortage of workers in the high-tech sector and the increase in demand for H1-B visas, I question whether we are doing enough to train our current work force in technology.

I am interested to hear from our witnesses on how we can better support technical training for our current workforce as well as our future workforce. Through a thorough review of federal, state and private sector practices toward education and technology, I hope that we can find a solution to bridging the digital literacy divide.

Mr. UPTON. Without objection, I would note that all members of the subcommittee—I will make the unanimous consent request that all members of the subcommittee, in fact, their entire opening statements will be made part of the record and, at this point, I will go to Mr. Shimkus.

Mr. SHIMKUS. Thank you, Mr. Chairman. I am going to be following Congressman Markey with the running shoes on as we have a hearing downstairs on the EU privacy laws, which is an exciting issue. So, I apologize to the panel if they see me coming back and forth.

The issue I want to focus on is how do we train the teachers to be available to keep using this new medium. I got a letter from one of my constituents on the tax proposals, and marriage penalty, and reductions, and she is working two jobs, trying to get three kids through college. She teaches night at a local community college to make sure she has her certification to keep qualified to teach. Anymore educational requirements really comes out of her ability to meet the needs of her family. It was a very sad and frustrating letter, and I scribbled her a note, but that is my focus.

This new medium, how do we bridge that? We can have all the technology in the world, but if we can't get it to the teacher who can get trained without taking away from the other aspects of their lives and fending for the needs of their family, then it is really more personal than a lot of people like to believe. So that is what I will be trying to address and see how we can do that. If you can address that at some point, I would appreciate that.

A great hearing, Mr. Chairman, and I look forward to being a participant. I yield back my time.

Mr. UPTON. Thank you. I recognize the chairman of the full committee, Mr. Tauzin.

Chairman TAUZIN. Thank you, Mr. Chairman. I wanted to make a special visit to the subcommittee today to welcome this panel and congratulate you on your focus, Mr. Chairman.

I think the concept of literally focusing in on how the new technologies can make a difference in the lives and can educate children to the potential of their lives is truly a good one, and I want to wish you well on that.

I want to especially welcome WISH TV representatives here. WorldGate Communications—Hal Krisbergh is here representing them—began a pilot program in my home State as a result of a high technology conference we had at LSU where we determined that young children in my home State, primarily minority kids and some rural parishes I represent, start school so disadvantaged that they never catch up. And the concept of using this new technology to bring the Internet not just to the school, not just to the library, but right into their homes, without the need of a computer, using equipment that Mr. Krisbergh and his company produced that literally connects the Internet to an analog television set by the cable—and, again, his generosity, and the other cable companies, has created a new pilot program in the State. LSU and my home university, Nichols—we call Nichols "Harvard on the Bayou", you know—worked on software programs that were demonstrated here in Washington. I think 12 States or more now participate with similar pilot programs, and it is just the beginning, just scratches the surface of what can be done if we introduce this technology at an early age to children who might never otherwise experience it. And all of a sudden, they and their families, their whole families—single moms in most cases—but the other siblings and other relatives now have that as part of their lives, and they are beginning to explore the possibility of their young lives, possibility of lives that otherwise would have been lost, I think, and that is a great focus.

Mr. Chairman, I think we, at this level, get all tied up in which big companies will win what battles for a marketplace under what policy we set, and we forget that the real focus needs to be on the real faces out there, the children and the lives of individuals in our society who are going to be either improved or left behind because we either make this technology meaningful in their lives, or we never do. And it is a right focus. I commend you for it. I thank the witnesses, it is such a broad array of witnesses that I think you will hear a lot today about this potential, and about what is happening out there in the marketplace, and what people are really doing to make it meaningful.

And I thank you for sharing with us today, for bringing your expertise to our consideration but, most important, Mr. Chairman, you get it. I mean, you are onto it. This is where we in Government ought to be focused as we make these big policy decisions, where the rubber really hits the road with this technology, and where children and real lives are affected. Thanks again, my great wishes to your successful hearing. My thanks to all you witnesses for coming today.

[The prepared statement of Hon. W.J. "Billy" Tauzin follows:]

PREPARED STATEMENT OF HON. W.J. "BILLY" TAUZIN, CHAIRMAN, COMMITTEE ON ENERGY AND COMMERCE

Mr. Chairman, thank you for holding this hearing today. The confluence of technology and education is an exciting and important trend in this country. Advances in technology have enhanced the learning experience of many of our youth. Technology-based learning tools can make the educational experience much more enriching for children. And, as the Internet fosters a more knowledge-based economy, a solid education is the key to advancement in the workplace.

I would like to welcome our guests today, particularly Hal Krisbergh, Chairman and CEO of Worldgate. Through WISH TV, Worldgate works with cable companies and schools to provide in-school and in-home Internet access in disadvantaged communities. WISH TV enables users to access the Internet and e-mail through their television sets and existing cable connections. No computer is required. Currently, WISH TV has pilot programs in eleven schools across three states, including at Belle Rose Primary in Belle Rose, Louisiana.

Last fall, WISH TV also came to the Rayburn Building to demonstrate its service. Several fourth-graders showed former FCC Chairman Bill Kennard and I just how easy it is to use WISH TV's wireless keyboards to access the Internet through regular television sets. WISH TV provides disadvantaged communities with an opportunity to embrace the Internet that they otherwise would not have. I am delighted that WISH TV is helping enrich the minds of my constituents in Assumption Parish and I look forward to the program being extended across the country.

Today's panel demonstrates the breadth of programs that exist to bring technology into the classroom. We have representatives of federal, state, and local initiatives; private efforts; and public/private partnerships. It is important to understand that providing Internet access to disadvantaged communities is not strictly dependent upon federal support. The e-rate program has distributed more than $1 billion so that schools and libraries can receive discounts on telecommunications services. But the e-rate program has also not even distributed all of the money that has been promised to schools and libraries. A GAO study in December found that, of the $3.7 billion that had been committed to applicants in Years One and Two, at least $1.3 billion (35 percent) had not been paid out by August 2000, despite the fact that the deadlines for use of the funds had to be extended several times. I am not mentioning this issue to be overly critical of Kate Moore or the Schools and Libraries Division. I am merely trying to point out that state, local, and private efforts as well as public/private partnerships are at least as responsible for the current availability of Internet access in schools and libraries as federal programs.

I plan to work with Jerry Weller again to phase out the schools and libraries program. We will use one-third of the Spanish-American War tax to fund the schools and libraries program for several more years—putting the other two-thirds of that tax back into the pockets of consumers. After several more years of funding, the schools and libraries program will have achieved its goal: ensuring that our nation's schools and libraries have access to advanced telecommunications services.

Based upon the efforts that we will hear about today, I am confident that we can finish the job of bringing the Internet into our schools within the next several years. Before I leave Congress, I want every child in Louisiana to have access to the Internet. I applaud our witnesses for their efforts to make my goal a reality and I look forward to hearing about their progress.

Mr. UPTON. Mr. Terry.

Mr. TERRY. I will waive.

Mr. UPTON. Okay. Well, that is the—and let me just say this again. For the subcommittee members that are not here, their statements will be part of the record.

I just want to introduce the panel and, at that point, we will break. The buzzers you hear mean that that is the second bell for votes.

[Additional statements submitted for the record follow:]

PREPARED STATEMENT OF HON. STEVE LARGENT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OKLAHOMA

Mr. Chairman, thank you for holding this morning's hearing to examine the federal, state, and private sector investment in technology and the impact it has made on our educational system.

Over the past three years, the Universal Service Administrative Company (USAC) has committed over $5.8 billion dollars, collected from telephone customers, to wire up our nation's schools and libraries to the Internet. I think this is a significant accomplishment.

As I read over our witnesses testimony before this morning's hearing, it was clear that technology is, and will continue to be, an important component of our children's education.

However, one thing I did not discern from the testimony was the verification that our children's test scores are going up for that $5.8 billion investment. My primary concern as a policy maker, and more importantly as a father of four, is that our country's youth are actually learning the skills to compete on a high level in the 21st century.

This week, we've experience two tragic high school shootings. I'm concerned that our kids are losing their sense of purpose, as well as hope.

A couple of years ago, Tom Brokaw wrote a best a selling book entitled, Our Greatest Generation. The book chronicled the lives of average Americans who grew up during the depression, made huge sacrifices for their country during World War II, raised their families, and contributed to society. In short—they made a difference.

I'm worried that the sense of purpose and hope that was the hallmark of our parent's and grandparent's generation is turning into a sense of disillusion and entitlement in many of our children's generation.

The use of technology is an important tool in our kid's education, but we as parents, teachers, superintendents, and society as a whole, need to find additional ways to instill a sense of purpose and hope, so that our children will have a bright and prosperous future.

PREPARED STATEMENT OF HON. BARBARA CUBIN , A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WYOMING

Thank you Mr. Chairman for holding this very important hearing.

I am proud today to relay to my colleagues on the Subcommittee a success story from the most rural state in the union and how it has become a model of 21st Century education.

The reason: it has embarked on a telecommunications breakthrough that will not only benefit every public school student in the state, but also every community in that state.

I, of course, am talking about Wyoming and the work that has been done by Governor Jim Geringer and Judy Catchpole, Superintendent of Public Instruction.

The Wyoming Equality Network is a statewide, high-speed data and video network that connects all Wyoming public schools and gives communities the capability for telemedicine, economic development and community outreach applications as well as access to the Internet.

Wyoming is known as the Equality State. The initiative to ensure access to education and advancements in telecommunications is based on the principle of equality—equal access to education and information by all of Wyoming's public school children.

Wyoming is an extremely rural state with only 480,000 residents covering more than 98,000 square miles.

There are 49 school districts with 154 elementary schools, 63 junior high or middle schools, and 73 secondary schools.

To say the least, our elected officials had their work cut out for them in attempting to construct a statewide intranet to provide data access to every school building in the state and two-way interactive videoto every high school in the state by this past summer.

I'm proud to announce that their hard work and dedication has paid off.

Wyoming public schools are connected. It's a success story that originates from local officials working in a cooperative effort to do what's best for Wyoming's youth.

I am committed to doing everything I can on the federal level to continue that success by encouraging the deployment of advanced services to all reaches of Wyoming.

Again, Mr. Chairman, I'm very pleased that this subcommittee has taken on this very important issue. I yield back my time.

PREPARED STATEMENT OF HON. CHIP PICKEING, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSISSIPPI

Mr. Chairman, I commend you for conducting this hearing today. This Subcommittee is well aware of the many benefits of technology to consumers and the economy, but has not focused on the benefits technology can bring to the classroom.

I understand that education will be a focus for Chairman Upton and I applaud that decision. Anything that this Subcommittee can do to promote and expand some of the initiatives that are taking placing around the nation is well worth our time.

In my home state of Mississippi, I am quite proud of what is happening insofar as bringing technology into the classroom. I'd like to take a few minutes to describe to my colleagues three of the programs that have been implemented in Mississippi.

The Blair E. Batson Hospital for Children is located in Jackson, and is at center stage when it comes to treating the medical needs of Mississippi's children. The patients come from all of Mississippi's 82 counties and come as the victims of serious trauma or with life threatening or chronic illnesses—cancer, cystic fibrosis, sickle cell anemia, hemophilia, congenital heart defects and many others. While the hospital and its professional staff are unique on their own, "Connect-2-Tomorrow" puts the hospital into a league by itself.

Connect-2-Tomorrow is a program that placed Internet, email and Internet video conferencing software into the hospital to allow the patients the ability to remain connected to the outside world. Through this initiative, patients are enabled to remain in contact with their schools and teachers as well as family and friends. For patients at such an early stage in life, a lengthy stay in the hospital can be quite traumatic. This program allows children to remain active and engaged in their schools as well as stay in touch with their peers. Funded in part by a grant from NITA, it is an excellent example of pairing federal funds with state funds to produce a worthy program.

Another Mississippi program that has great potential is ExplorNet, which is also operating in several other states. ExplorNet establishes a "vocational-type" program in high schools that trains students in repairing, upgrading and building computers. At the completion of the course, these high school students have real world experience and skills valuable in the marketplace. Several schools in my district are using this program and I will be visiting one in the next few weeks.

The last program I would like to mention is Mississippi EDNET which was formed to promote education and research throughout Mississippi. EDNET is a modern, cost effective distant learning system capable of reaching and teaching Mississippians where they live and work. It provides two channels of educational programs designed for use at home or in the classroom free of charge.

Mr. Chairman, I think this programs and others we will hear about today demonstrate the vast potential of technology in education. Whether it is through ITFS, the internet, or video streaming, technology can be a "multiplier" of resources to reach a broader audience and give students a broader view of the world around us. Once again, I appreciate your conducting this hearing and look forward to working with you to improve the opportunities and technological resources allocated for educational purposes.

PREPARED STATEMENT OF HON. BOBBY L. RUSH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. Chairman, thank you for holding this timely hearing on the various programs and investments made in technology and education. I would like to speak about one program that is near and dear to my heart, the E-rate program. In the past few months we have heard many proposals from the current Administration to abolish the E-rate program or turn it into a block grant. As a staunch proponent of bridging the digital divide between the haves and the have nots, I must speak out against such action.

Since its inception, the E-rate program has wired thousands of schools and libraries and committed over $5.8 billion dollars, funding over 82,000 applications. The E-rate is reaching students in my community and across the country. In a time where everything is technology driven, we must prepare our students to be technology savvy in order to compete in this global economy. The E-rate program is accomplishing this task by successfully bringing technology to schools and libraries across the country.

Mr. Chairman, we will later hear more about the E-rate from our invited witness, Ms. Moore, so I will not beleaguer the point of why we need this valuable federal program. However, preparing our students to be competent technologically is not an easy feat and cannot be accomplished by the E-rate alone. We need more State and

Corporate partnerships to help bridge the digital divide. With that said, I look foward to hearing the testimony of our distinguished panelist on their programs and how they are bridging the digital divide.

PREPARED STATEMENT OF HON. ANNA ESHOO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. Chairman, thank you for your work and for calling this important hearing.

I'm pleased that the President has expressed a commitment to education and technology. But in his plan titled "No Child Left Behind" I was concerned to read that the E-Rate could be consolidated with other technology grant programs.

I know that many of us believed President Bush's proposal to convert the E-Rate into a block grant program with other Department of Education technology programs would be a grave mistake. But I was pleased to hear that Secretary Paige calmed the concerns of many by saying the E-Rate would not be consolidated into the Department of Education.

The universal fund is an economic security issue as much as an educational or telecommunications issue. By putting computers in the classroom the E-rate is helping build the next generation of scientists and mathematicians. In order for our children to succeed in the 21st century they must be computer literate and we must work to give our children access to the tools they need to learn and succeed.

Our goal must be for every child in America to bridge the digital divide. Currently, the E-Rate programs serves all schools—public, private and parochial. The program is targeted to poor schools and rural schools. Each school gets to apply for the telecommunications services they want and need.

In 1994, before we had the E-Rate, 3% of classrooms were wired, while in 2000 72% of classrooms were wired. It is important that the E-Rate be available to every school. If it changed to block grants, private and parochial schools would have to negotiate with State education agencies and worry about entanglements of federal regulations. Five years ago, Congress voted overwhelmingly in favor of the Telecom Act which included the establishment of the Universal Service Fund for the Internet—which we call the E-rate. In the House the vote was 414 to 16. In the Senate the vote was 91 to 5.

I hope the President and the Congress can stay as committed to the E-Rate as we were in 1996. Today the stakes are high and I do not intend our children to miss out on the global economy.

Thank you, Mr. Chairman, and I appreciate you holding this very informative hearing.

PREPARED STATEMENT OF HON. ELIOT ENGEL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Thank you, Mr. Chairman, for holding this informational briefing on public and private investments in education technology. We all know that technology has become an integral part of our lives, and that students must have access to information technology in order to increase their achievement in school and to provide them with the skills they need to succeed in the workplace.

Unfortunately, however, many American students do not have access to computers and the Internet. There is a significant "digital divide" separating American information "haves" and "have nots." There is a persistent and growing discrepancy between the information rich—who tend to be wealthier, more educated, and living in more affluent suburbs—and the information poor—who tend to be poorer, less educated, and living in rural areas or central cities.

The digital divide is quite evident in my Congressional District. Many of the schools in the Bronx and Westchester are too old to be wired, do not have adequate funds to buy computers, and are too concerned with teaching children the basics in overcrowded, underfunded schools. Seeking out companies to donate the necessary equipment to bridge the digital divide is a burdensome task that is too infrequently undertaken. As a result, many of the students in my district have no experience working with computers or the Internet.

Despite these barriers, one middle school in my district has formed a unique collaboration with both Manhattan College and Apple to provide computers to every student in the school and created a supportive learning environment for its students. The school, Middle School 368, or the "Information Technology School" (In-Tech), provides every child at the school an I-Mac lap-top computer to be used for schoolwork, homework, research purposes and communicating with teachers, via email, after school hours. The children are being taught how to use the hardware

and different software applications for both basic school applications and 'real-world' applications used by graphic designers and web designers. Manhattan College provides In-Tech with support for an extended school day and an inspirational new math program to encourage girls, who too often avoid math, to master the subject matter. The school also offers a before school program where girls and boys can play mathematical games and learn math in a fun, stress-free manner. In-Tech's tremendous technology will be adapted for the morning sessions so that the kids will have access to over 50 math-geared Internet sites.

I am proud to highlight In-Tech as a wonderful example of how we can use technology in the classrooms. I look forward to hearing from the rest of the panel on other ways we can incorporate technology into education.

PREPARED STATEMENT OF HON. GENE GREEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Mr. Chairman: I want to commend you for calling this hearing today to provide the Subcommittee with a better picture of exactly what types of technology assistance are available from both the public and private sector to help bridge the Digital Divide.

Mr. Chairman, five years ago the Internet was just starting to reveal its true potential.

Today, in the half decade since the passage of the Telecommunications Act of 1996, we have a clearer understanding of how to apply the benefits of the Internet to many of the social problems facing this country.

In particular, the Internet offers the hope and promise of being a significant educational tool.

Access to the Internet provides our children with boundless information options. Our goal now needs to be how we can use that information and raise the educational standards of our nation's children.

The focus of today's hearing will be on examining all types of federal, state, local, and private efforts to bring the Internet to schools.

I want to make some brief comments concerning the positive effects that the federal E-Rate program is having in my state and community.

The State of Texas has received over $26 million dollars in the last two years via the E-Rate program.

The Houston Public Library system has benefitted from over $400,000 in E-Rate grants over the last three years.

And Houston area schools benefitted from over $9 million dollars of funding from E-Rate in the most recent program year alone.

E-Rate is working.

I understand that President Bush would like to eliminate this valuable education tool and block grant the money to the states, but my local folks are telling me they like the program just the way it is.

Consolidating or eliminating this valuable educational tool would be a disservice to the children of this country.

That is not to say the program cannot be fine tuned.

I am sure many of you are aware of the General Accounting Office (GAO) report highlighting some difficulties being experienced by the Universal Service Administrative Corporation (USAC) in getting the Schools and Libraries Division up and running.

Of particular concern was the amount of obligated funds going unspent because of the many problems schools and libraries encountered when submitting the necessary paperwork acknowledging receipt of service.

Without this paperwork indicating that they are receiving service from their vendor, the USAC cannot release funds for reimbursement.

The Subcommittee is going to be hearing from Ms. Moore, President of the Schools and Libraries Division who I hope will touch on measures being undertaken by her organization to improve the disbursement rates.

Money obligated, but not spent, keeps children who need the Internet for homework or school projects from accessing it.

Although I hope this program will eventually become a model of efficiency, I have introduced The Children's Access to Technology Act to ensure that no obligated funds go unspent.

My legislation creates a new fund for Title I schools using any obligated funds that go unspent at the end of any E-Rate program year.

I understand funds are tight for this program, but we should use every dollar given. We also should urge the FCC to increase overall funding.

Again Mr. Chairman, I appreciate you calling this hearing today and I hope we will get some new suggestions on ways to increase the flow of technology to our children no matter what the source.

Thank you and I yield back the balance of my time.

PREPARED STATEMENT OF HON. BILL LUTHER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MINNESOTA

Thank you, Mr. Chairman, for recognizing me.

While some may think it a bit trite to say, I believe we all agree that giving every school-aged child access to the Internet is a challenge that Congress must meet. Given the importance of information technology in the modern economy, it is crucial that all of our children at a young age—whether they are rich or poor, urban or rural—become acquainted with cyberspace and all of its resources. With the rapid and astounding progression of the Internet, this need to educate all of our children in such a fashion is only going to become more critical in the future. Otherwise, we will be fostering an entire generation of citizens who will be at a basic disadvantage in our global economy.

Mr. Chairman, I look forward to hearing the testimony from our witnesses today to see how effective federal programs are at meeting the needs of a modern education. Thanks you, Mr. Chairman, and I yield back the balance of my time.

PREPARED STATEMENT OF HON. JOHN D. DINGELL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Thank you, Mr. Chairman, for holding this important hearing on the subject of technology and education. First, I would like to extend my appreciation to all the witnesses for appearing today, and extend a special welcome to our distinguished guests from the Michigan Virtual University, David Spenser and Jamey Fitzpatrick. I am pleased that you could be here to share information about your important work with the Committee.

Today's hearing focuses on what is perhaps the single most important challenge of the Information Age. That is, how do we make sure that every child across the nation has an equal opportunity to access the latest technology in furthering his or her education.

Our new President campaigned on the slogan that "no child will be left behind" when it comes to education. I was pleased to note in recent press reports that Mr. Bush has reconsidered his earlier proposal to move the e-rate program to the Department of Education, presumably to be administered through block grants. I believe that move would have been a disaster for schools and libraries everywhere, but particularly those in the neediest areas of the country who have come to rely so heavily on this program.

If the President really wants to leave no child behind, then I believe it is absolutely essential that he and Congress work together to make sure the "digital divide" is closed in education, and the sooner the better.

Along those lines, a particularly distinguished and highly respected leader in government service once said, and I quote, "Some say all you have to do is pull yourself up by the bootstraps, but there are too many people who don't have boots, let alone straps." That compelling observation was made in 1995 by now Secretary of State Colin Powell. Powell also happens to be one of the founding members of PowerUp, an organization represented by one of the witnesses before the Committee today, whose explicit mission is to close the digital divide.

So it appears that at least the elder Powell would agree the digital divide issue is an important one. In my view, it is self-evident that all children today must have an equal opportunity to access computers and other information technology if they have any hope of being competitive in the job markets of tomorrow.

That is why Mr. Towns and I introduced the Digital Bridge Trust Fund Act last Congress. It would have phased out the telephone excise tax over a period of years, and in the interim used the money to build a trust fund targeted at bridging the digital divide. The trust fund would accomplish a number of things. It would help train new teachers in the use of technology in the classroom. It would help low-income and rural communities provide better access to computers and hands-on training. And it would help strengthen NTIA's Technology Opportunities Program, also known as the "TOP" program, which provides matching funds to innovative community technology programs. Mr. Towns and I plan to reintroduce this legislation in the near future, and I look forward to working with Chairman Upton and other Members of the Committee on this important legislation.

Among the programs the Committee will be discussing today is the e-rate program. While the goals of the program are laudable, I have, in the past, taken issue with the breadth of the FCC's authority in this area. But in July of 1999, the 5th Circuit Court of Appeals upheld the legality of the FCC program as designed, and that decision was later upheld by the U.S. Supreme Court. With those decisions behind us, there is no uncertainty as to the legitimacy of the e-rate program. And, after an uncertain start, the FCC has—to its credit—modified the program to ensure that the neediest schools and libraries have priority in receiving e-rate funds.

However, there is still one area of particular concern that I think should interest all Committee Members. The e-rate program is financed by contributions made by all telecommunications carriers to the Universal Service Fund. These companies are then permitted to collect from customers what they have contributed to the fund. However, no controls currently exist to make sure these companies do not collect more from consumers than they are actually paying into the fund.

Given that some companies are charging as much as 8.5% of the consumer's telephone bill for the e-rate, and the FCC, through the USAC, only collects at a rate that is slightly more than 5%, we must ask where the rest of the money is going. Clearly no company should be cutting a fat hog on the e-rate program. If excess money is collected, it should be refunded to customers in a timely manner.

Mr. Chairman, I certainly hope we can get to the bottom of this billing and collection problem with due haste. Our constituents deserve to know that their money is being properly spent. Thank you, Mr. Chairman, and I yield back.

Mr. UPTON. We welcome Ms. Kate Moore, President of Schools and Libraries Division of the Universal Service Administrative Company; Dr. David Spencer, President and CEO of Michigan Virtual University; Dr. Dan Domenech, already defined as the Fairfax County Public Schools Superintendent; Sister Dale McDonald, Director of Public Policy and Educational Research from the National Catholic Education Association; Ms. Judith McHale, President and COO of Discovery Communications; Mr. Hal Krisbergh, Chairman and CEO of WorldGate Communications; Ms. Rae Grad, Chairman of the PowerUP-Bridging the Digital Divide; Ms. Jennifer House, Vice President of Strategic Relations for Classroom Connect, and Dr. Emlyn Koster, President and CEO of Liberty Science Center.

At this point, we will probably take about hopefully what will only be about a 15-minute break for allowing members to go and vote and return. Hopefully there will not be an immediate vote following that. At that point, when we come back we will start with your testimony and proceed as long as we can go.

[Brief recess]

Mr. UPTON. We did have a couple of votes. I am told that we have about an hour once this present vote expires and at that point we are probably going to have six consecutive votes, so we will probably break at that point for a little while.

Your statements are made part of the record in their entirety, and what I would like to do is limit your oral presentation to about 5 minutes. We have a little timer that Will is going to operate—I can do it myself, but it is fun little gadget here. When we first started, we had little kitchen eggtimers, so we have moved on.

Ms. Moore, we will start with you, and you will see how this thing works. There is a little yellow light that gives you an advance that probably about 30 seconds later the 5 minutes will expire, but if you would limit your remarks to about 5 minutes, that would be terrific.

STATEMENTS OF KATE L. MOORE, PRESIDENT, SCHOOLS AND LIBRARIES DIVISION, UNIVERSAL SERVICE ADMINISTRATION COMPANY; DAVID A. SPENCER, PRESIDENT AND CEO, MICHIGAN VIRTUAL UNIVERSITY; DANIEL A. DOMENCH, DIVISION SUPERINTENDENT, FAIRFAX COUNTY PUBLIC SCHOOLS; SISTER DALE McDONALD, DIRECTOR OF PUBLIC POLICY AND EDUCATIONAL RESEARCH, NATIONAL CATHOLIC EDUCATION ASSOCIATION; JUDITH A. McHALE, PRESIDENT AND CHIEF OPERATING OFFICER, DISCOVERY COMMUNICATIONS, INC.; HAL KRISBERGH, CHAIRMAN AND CEO, WORLDGATE COMMUNICATIONS, WISH TV; RAE GRAD, CHAIRMAN, POWERUP: BRIDGING THE DIGITAL DIVIDE; JENNIFER HOUSE, VICE PRESIDENT OF STRATEGIC RELATIONS, CLASSROOM CONNECT, INC., AND EMLYN H. KOSTER, PRESIDENT AND CEO, LIBERTY SCIENCE CENTER, LIBERTY STATE PARK

Ms. MOORE. Thank you, Mr. Chairman. Thank you and members of the committee. I appreciate the opportunity to be here today to describe the work of the Schools and Libraries Division of the Universal Service Administrative Company, known as USAC, as we administer the Schools and Libraries Universal Service Support Mechanism, also know as the "E-rate".

The Schools and Libraries Program provides up to $2.25 billion annually in support of eligible schools and libraries to help offset the cost of advanced telecommunications services. Libraries, public schools, private schools, kindergarten through high school are eligible for the program.

Over the first 3 years of the program, we have committed $5.8 billion funding over 82,000 applications to organizations in all 50 States, the District of Columbia, and all United States Territories.

The neediest schools and libraries have been served with the majority of the funding going to them. More than 80 percent of public schools, well over a third of Catholic schools, over 10 percent of other private schools, and more than half the nation's libraries are participating in this program.

The commitments we have made to the eligible entities receive discounts ranging from 20 to 90 percent on telecommunications services or Internet Access as well as internal connection projects, projects which help to wire a network and facilitate the use in schools and libraries of advanced telecommunications services, and that range of discount—those range of discounts correspond to the income level of students' families and whether that location is urban or rural.

While it is schools and libraries who apply and receive commitment of funds from the SLD, the actual cash disbursements are made consistent with the Act to service providers. This program is not a grant program, it is a discount program covering telecommunications and related services.

I should note that USAC has no policy role. We simply administer the Universal Service Fund in accordance with regulations promulgated by the Federal Communications Commission.

The administration of the program is based on three principles—reliance on marketplace competition with the whole theme of the Telecommunications Act dependence on local decisionmaking, and

requirement for local investment. Indeed, to receive funding applicants must certify that they have secured access not only to their share—that is, the undiscounted portion of the bills that they get—but also to other required resources, such as the computers, professional training and software.

Internally, we operate with a commitment to integrity and effective stewardship, excellence in client service, and cost-effective administration. We take very seriously our responsibility for program integrity and invest heavily in the review and audit functions.

As for cost-effective administration, last year costs were less than 2 percent of the program funds. For each year of the program, we have received over 30,000 applications for funding, most of them happily filed online. We are beginning now to review the 37,000 applications received for the fourth year of the program, where demand is estimated to be over $5.7 billion.

The FCC has established a priority system that we must follow when demand exceeds available funds. The first priority is to support telecommunications and Internet Access, and the second priority is to support internal connections requests, starting first with the neediest applicants and making commitments to the less needy only as funds permit.

In closing, Mr. Chairman, let me turn to a survey report developed by members of the Education and Library community, "E-rate: Keeping the Promise to Connect Kids and Communities to the Future", because this speaks to the heart of the program and what we do.

The E-rate has increased opportunities for learning in schools and libraries across America. Students are actively involved in dialogs either through e-mail or videoconferencing, with scientists and other experts, as well as fellow students from around the world.

As Karon Tarver, Technology Director for the East Chambers Independent School District in Winnie, Texas commented, "The E-rate has helped this farming community student body to see beyond the rice fields. Students are more interested in technology and participating in a global economy."

Thank you, Mr. Chairman and members of the committee in this program. I would be pleased to answer your questions.

[The prepared statement of Kate L. Moore follows:]

PREPARED STATEMENT OF KATE L. MOORE, PRESIDENT, SCHOOLS AND LIBRARIES DIVISION, UNIVERSAL SERVICE ADMINISTRATIVE COMPANY

Good morning, Chairman Upton and Members of the Committee. My name is Kate Moore, President of the Schools and Libraries Division of the Universal Service Administrative Company. I would like to thank you for the invitation to appear before you today and to provide you with information about what the Universal Service Administrative Company is doing to administer the Schools and Libraries Universal Service Support Mechanism, also known as the "E-rate."

My testimony will focus on three areas:

1. Description of USAC, and the operations supporting the Schools and Libraries Program
2. Programmatic Highlights
3. Recent Improvements for Program Participants

USAC AND THE SCHOOLS AND LIBRARIES PROGRAM

The *Universal Service Administrative Company* (USAC) is a private, not for profit corporation incorporated in September 1997 with the purpose of administering the four Federal universal service mechanisms—the High Cost support mechanism,

which supports telecommunications in areas costly to serve, the Low Income support mechanism, which helped low income telephone subscribers, the Rural Health Care support mechanism which supports telecommunications services for rural not for profit health care providers and the schools and libraries support mechanism, which supports telecommunications, Internet access and internal connections to libraries and k-12 schools. Through that work we are providing every state, the District of Columbia and all territories with access to affordable telecommunications services.

Until 1996, the Universal Service Fund supported only two support mechanisms—the High Cost support mechanism and the Low Income support mechanism. In the Telecommunications Act of 1996, Congress expanded the reach of the Universal Service Fund to provide support for not for profit rural health care providers and schools and libraries.

The Universal Service Fund is generated through contributions from all telecommunications companies in the United States, including local and long distance phone companies, wireless and paging companies and pay phone providers. USAC administers the Universal Service Fund under regulations promulgated by the Federal Communications Commission (FCC). Although consumers benefit from the Universal Service Fund, only companies that provide telecommunication and other services may draw money directly out of the Universal Service Fund, which defrays the cost of delivering service to consumers.

The High Cost is the largest support mechanism and will provide estimated explicit support of $2.7 billion in 2001, the Low Income $600 million, Rural Health Care $10 million and Schools and Libraries $2.25 billion. These programs together provide affordable access to modern telecommunications services for consumers, rural health care providers, schools and libraries regardless of geographic location or socioeconomic status. The Schools and Libraries Division (SLD) manage the day-to-day operations of the Schools and Libraries program.

A Board of Directors governs USAC and oversees the actions taken by management and the Board Committees. The USAC Board of Directors is comprised of nineteen members and includes representation from the telecommunications and information services industry, state telecommunications regulators, state consumer advocates, low-income consumers, education and library community and the USAC CEO.

USAC has no policy role; its job is to administer the Universal Service Fund in accordance with FCC regulations. We are not permitted to advocate policies or to lobby; our role is simply to effectively and efficiently implement the program consistent with FCC rules and regulations.

The *Schools and Libraries Program* provides support for eligible schools and libraries to help offset the cost of advanced telecommunications services. Public and private schools, kindergarten through high school are eligible. FCC rules rely on state law for precise definitions of "schools" for the determination of eligibility for the program. Public libraries, and many private ones, are eligible for the program.

Eligible schools and libraries receive discounts ranging from 20 to 90 percent on the following services:

- Telecommunications services, including local and long-distance service
- Internet access
- "Internal connection" projects such as wiring and networking schools and libraries to facilitate the use of advanced telecommunications technology.

The range of discounts available to schools and libraries corresponds to the income level of students in their community and whether their location is urban or rural. Income for a school or district is measured by the percentage of students eligible for the National School Lunch Program (NSLP) administered by the United States Department of Agriculture.

While it is members of the schools and libraries community who apply for the funds, and who receive commitments of funds from SLD, the actual cash disbursements are made, consistent with the Telecommunications Act, to service providers, after the services have been delivered to the customer. This program is not a grant program; it is a cost-reduction program for the schools and libraries.

SLD has committed $5.8 billion for the first three program years—to all states, the District of Columbia and all territories. The neediest schools and libraries have been served. More than 80% of public schools, more than a third of Catholic schools, over 10% of other private schools, and more than half the Nation's libraries are participating.

The application process is a three-step process. First, the applicant completes a form that we post for 28 days on our web site that serves as an open invitation for vendors to bid. At the same time the applicant develops or refines a technology plan, ultimately to be approved by agencies such as the state department of education or the state library agency. Secondly, after the 28-day period the applicant is free to

select the vendors, sign a contract for services and send us another form with details concerning their selection of products and services and vendors. Finally, after the vendor has begun delivery and the service is working as contracted, the applicant completes another form, affirming the technology plan has been approved and allowing us to pay the vendor.

The administration of the program is based on the following three principles:

1. *Reliance on marketplace competition.* Applicants must seek competitive bids on all services the program supports. Our web site provides a national bulletin board to advertise their service needs. State and local competitive bidding procedures drive the process.
2. *Dependence on local decision-making.* The local public or private schools and libraries have the flexibility to select the technology and network design that will best meet their educational needs. Selection of service providers is also made by the school, school district or diocese, the library, or, in the case of statewide applications, by the state. USAC is not involved in selecting the type of service, service configuration or vendors. State and local needs and procurement laws and regulations, with the specific program requirement that they choose the most cost-effective bidders, drive the decision process. In addition, the application process is open to organizations at the school level, the school district level, and the state level. The same openness is true for the library sector. The decision about who administers the Schools and Libraries program funded projects is a flexible one—made by local and state authorities, based on their needs, not USAC's needs.
3. *Requirement for local match.* No matter how poor the applicant, the program requires state or local investment. For the neediest schools, services are discounted at 90%. At the same time, to receive funding, the applicants must certify that they have secured access not only to their share (such as the 10% match), but also to the other resources—such as computers, professional training time, and software—that are needed in order to effectively use the Schools and Libraries program discounts.

As indicated above, the Schools and Libraries program is designed to serve a broad range of applicant types, at every level, and it supports private schools as well as public, including secular, and indeed, faith-based schools.

Before providing funding and programmatic highlights, let me observe that we at USAC are committed to 1) integrity and effective stewardship, 2) excellence in client service, and 3) cost-effective administration. We take very seriously our responsibility for program integrity. No one would want us to be anything but vigilant in assuring compliance with FCC rules and the law, and as you know, Congress has already directed GAO to undertake two in-depth studies of this program in the course of its three-year life. We invest significantly in the Program Integrity Assurance Review and audit functions.

To help our customers participate in the program, we maintain a Client Service Bureau to answer their calls and e-mails. We conduct extensive outreach. We work closely with stakeholder groups—such as the Council of Chief State School Officers, the American Library Association, and representatives of service providers. And we maintain a web site on which applicants can file applications for funding and stay abreast of program developments.

We are committed to program integrity and customer service and also to keeping administrative cost as low as possible. Last year, administrative cost was below 2.0% of the $2.0 billion available to applicants in that period.

PROGRAMMATIC HIGHLIGHTS OF THE SCHOOLS AND LIBRARIES PROGRAM

Funding Requests and Commitments

Over the three-year life of the program USAC has committed over $5.8 billion dollars for schools and libraries, funding over 82,000 applications. In year one, we committed $1.7 billion; Year 2, $2.0 billion; and Year 3, $2.1 billion. For each year of the program, we have received over 30,000 funding applications—most filed on line. We are beginning now to review the more than 37,000 funding requests for Year 4, where demand is estimated to be over $5.7 billion.

The FCC has established a priority system that guides us when demand exceeds available funds, as it did in the first year of the program and last year as well. The first priority is to provide support for telecommunications and Internet Access requests. The second priority is to fund internal connection requests, starting first with the neediest applicants, and making commitments to the less needy only as funds permit.

Participation and Impacts

From Year 1, participation by public schools has been high. We estimate that applications received within the filing window included requests for 80 percent of America's public schools. That increased to approximately 85 percent for Year 3. We believe that in-window applications for Year 1 covered approximately 35 percent of America's Catholic schools; that increased to about 38 percent for Year 3. Participation by other private schools has nearly doubled—from 6 percent for Year 1 to 11 percent for Year 3. Library participation on in-window applications has increased from approximately 51 percent for Year 1 to about 62 percent for Year 3.

The Education and Library Networks Coalition (EdLiNC) surveyed E-rate participants across the country and reported just what improvements these dollars are buying in its publication *E-rate: Keeping the Promise to Connect Kids and Communities to the Future.*[1] In Decatur, Michigan, a rural village in the southwestern part of the state where half of the 1,200 students in public schools qualify for free and reduced-price lunch, E-rate funds made it possible for the Decatur Public School District to afford broadband T-1 connections, the only such lines in the village. The Decatur Public Schools are installing five Internet-connected computers in every classroom, which will give students access to distance learning opportunities and teachers access to new teaching methods and materials.

Cathedral High School in Boston, Massachusetts, serves an ethnically diverse inner city low-income community. The teachers and staff of Cathedral High believe that Internet-facilitated instruction is no longer a luxury, but a necessity. Said Richard Smyth, the school's Library Media Specialist, "We serve the poor . . . so E-rate funds [have] allowed us to provide the access that many wealthy school districts already provide." The Schools and Libraries program discounts enabled Cathedral High School to install networks connections throughout the school and purchase a T-1 connection to the Internet. The teachers have computers with Internet access and, with the help of other grants funds attracted by the E-rate funding, Cathedral is pursuing computers for students.

We hear directly from many others about the impact of the program. From the County Librarian in Gila County, Arizona, we heard the following:

> Gila County Library District serves a county with an area of 4700 sq.mi. and a population of 50,000. The e-rate helps us with the cost of networking eight public libraries and two schools scattered throughout this area, in remote communities as well as small towns. One library is on the San Carlos Indian Reservation, and one is accessible by a two-hour trip on an unpaved road. Our e-rate allows us to bring Internet service to populations that have no other local public access. Students, parents, winter visitors, temporary workers and the general public have all benefited from this connectivity.

More formally, the U.S. Department of Education's National Center for Education Statistics reported last year that the portion of instructional rooms with Internet access in public schools increased from 51 percent in 1998 to 63 percent in 1999.[2] We believe that E-rate funds were a major contributor to that increase, with funds from Year 1 and 2 accounting for nearly 1 million newly connected classrooms.

The Schools and Libraries program also impacts service providers and, through them, the economy. Some 4,733 service providers received the Schools and Libraries program commitments for Year 3, ranging from America's largest telecommunications companies and advanced communications equipment manufacturers to small telephone companies, Internet service providers, cabling installers and other small businesses.

The U.S. Department of Education sponsored a formative evaluation of the E-rate program's effects by the Urban Institute.[3] It examined data from the first two years of the program and linked SLD data with data from the National Center for Education Statistics. The major findings of the report were:

- America's public schools have taken the greatest advantage of the program, accounting for about 84 percent of the total funds.
- The E-rate is having the intended effect of supporting the development of Internet and telecommunications services, especially in poor areas. Per student funding to school districts increases dramatically with poverty.

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[1] Education and Libraries Network Coalition, *E-rate: Keeping the Promise to Connect Kids and Communities to the Future,* undated but released in the spring of 2000.

[2] National Center for Education Statistics, *Internet Access in U.S. Public Schools and Classrooms: 1994-99,* February 2000.

[3] Michael J. Puma, Duncan D. Chaplin, and Andreas D. Pape, *E-Rate and the Digital Divide: A Preliminary Analysis from the Integrated Studies of Educational Technology,* September 2000.

- Larger entities take greater advantage of the E-rate program, suggesting that larger organizations may have more of the human, technical, and fiscal capacity needed to apply for the E-rate program.
- Because of the program's preference for high-poverty schools and the greater ability of large organizations to take advantage of the E-rate, urban areas fare well in the program. Funding generally increases with increasing concentrations of minority students.
- Controlling for poverty in districts where up to 50 percent of the students qualify for free or reduced price lunch, rural districts receive higher funding per student than urban districts.
- The largest share of E-rate funds (58 percent) has gone to support the acquisition of equipment and services for internal building connections, particularly in the higher-poverty districts where, the authors suggest, schools may have had particularly poor infrastructure and wiring to support the development and effective use of telecommunication services.
- States vary greatly in their use of the E-rate, and the differences are probably driven to a large degree by the E-rate funding formula, which favors poverty and rural location.

RECENT IMPROVEMENTS FOR PROGRAM PARTICIPANTS

We strive continuously to simplify and clarify the program and make it easier for our participants.

In consultation with the FCC, we changed the two most important forms for program participation for Year 3 to make it easier for applicants to complete the forms. We have made additional improvements in Year 4 by making it easier for applicants to file forms online on our web site. For Year 4, applicants filed 84 percent of the funding request forms themselves online. This broad participation rate in online filing means fewer mistakes by applicants, lower administrative costs, and a speedier process of reviewing applications. In the year ahead, we will have more forms available to complete and submit online.

The Client Service Bureau available through a toll free number, is our first point of contact with applicants. We have emphasized better training and more frequent updates to help ensure that our staff at the Client Service Bureau gives applicants good advice. We are giving the Bureau new tools to help them get correct information and track the information they give.

The FCC has provided enhanced flexibility in the program. Recently it has decided to permit applicants to change service providers more easily, to permit applicants and service providers to substitute services when new or different equipment can better meet the need, and to expand timeframes for implementation of one-time purchases and installation.

In closing, let me turn back to the survey report I cited earlier *E-rate: Keeping the Promise to Connect Kids and Communities to the Future.* The findings were very heartening to those of us who work every day to deliver the promise of access to advanced telecommunications and technology to students and communities across this land. The report concludes that:

> ...the E-rate has increased opportunities for learning in schools and libraries across America. Survey respondents report that teachers are using their new Internet access to lead children on "virtual field trips" to zoos, museums, libraries, national parks and even foreign countries. Students are actively involved in dialogues either through e-mail or videoconferencing, with scientists and other experts, as well as fellow students from around the world. School are joining together to participate in collaborative online projects, such as the annual tracking of monarch butterflies, and students are becoming much more interested in their own education. For example, in the Holly Springs School in Holly Springs, Mississippi, a rural, high-poverty school district, second grade students are becoming more intellectually engaged and curious learners, finding out about foreign countries on the Internet, corresponding with pen pals and dramatically improving their vocabulary. As Karon Tarver, Technology Director for the East Chambers Independent School District in Winnie, Texas commented, "The E-rate has helped this farming community student body to see beyond the rice fields. Students are more interested in technology and participating in a global economy."[4]

[4] Education and Libraries Network Coalition, *E-rate: Keeping the Promise to Connect Kids and Communities to the Future,* undated but released spring 2000, page 9.

Thank you for your interest in the Schools and Libraries program and the opportunity to address this Subcommittee today. I would be pleased to answer your questions.

Mr. UPTON. Thank you.

Dr. Spencer.

STATEMENT OF DAVID A. SPENCER

Mr. SPENCER. Good morning, Mr. Chairman and members of the committee, my name is Dr. David Spencer. I'm the President and CEO of the Michigan Virtual University. It's a pleasure to be here this morning, and I guess I would start my testimony by framing the size of our knowledge economy as around $2.2 trillion, and the online component of e-learning within that economy is presently about $9.4 billion, and it is projected to increase to about $53 billion by 2003. We are looking at about a compound annual growth rate of about 54 percent just in the e-learning world.

The Michigan Virtual University is pleased to participate this morning. We are a private, not-for-profit corporation with a Board of Directors made up of corporate executives, higher education and K-12. It was initially formed by Governor John Engler and the Michigan Economic Development Corporation to accelerate the capacity of workforce development in our State for the automotive industry, IT, biotech, and we have initially provided corporate training and education to a vast array of companies throughout our State. This is part of a "Smart State" initiative throughout our State of Michigan that Governor Engler has put in place.

In addition to corporate training and education online, the Michigan Virtual University has some other unique public-private partnerships. One of those unique public-private partnerships is our agreement to work in a noncompetitive with 86 Michigan colleges and universities. At the present time, we have signed agreements with the President's Council, State universities of Michigan, which include 15 public 4-year universities, our 28 Michigan community colleges, as well as our independent colleges and universities within the State.

We have approximately 750 online degree program courses. We have about 12,000 students a semester taking online courses that are credit-oriented. And we also have training and education available for our faculty at our colleges and universities to help them become distance-learner providers within those institutions.

In addition to that, the Michigan Legislature and Governor John Engler provided the Michigan Virtual University with an $18 million grant to inaugurate the Michigan Virtual High School. In much the same way the Virtual University does not compete by offering its own degree, the Virtual High School does not offer its own diploma. Instead, we offer, in conjunction with the local school districts, an online education which is supplementary to what is offered right there with the local schools. This has been a great program.

One of the first launches in this program has been with an Advanced Placement Academy. At the present time, approximately 55 percent of our schools have face-to-face education. We have provided, through Apex Learning, online courses for advanced placement. Presently, there are about 1,000 students taking online

courses. In addition to that, we have an AP Review Program which includes about 10,000 students.

Another initiative that we are working on at MVU is a Career Guidance System. We have just launched Talent Freeway in conjunction with the Michigan Department Career Development. This is probably on of the best online career planning systems available anywhere in the country today—internships, career development—for parents, teachers, students, counselors at the schools.

Another initiative that is part of the Career Guidance System is we are part of the KPMG Pete Marwick Project with the U.S. Army for the e-Army initiative. The online Career Guidance System will be made available over the next 5 years to 80,000 soldiers for their career planning use as well.

Probably the two most significant initiatives at the Michigan Virtual University are the Statewide IT Training initiative. Governor Engler will announce next week 700 online IT courses available to every teacher, every student, and every administrator at the higher education level and the K-12 level in the State, with 850,000 potential users, for free, for 3 years, to help stimulate online education and training.

The last initiative is the Teacher Technology Initiative, or the Laptop Project. Governor Engler and the State Legislature provided $110 million to provide every teacher, public school teacher, 90,000-plus in the State of Michigan, a laptop, software and Internet connectivity. Apple, Compaq, Dell, Gateway, IBM joined together in a rigorous RFP process to provide laptops to Michigan school teachers, and this week we handed out the first laptops to teachers throughout the State.

I will close by citing a couple of initiatives and issues that we're looking at in e-learning today. No. 1, I think we must address quality and accreditation across all of our e-learning initiatives across the country.

Second, I think it is critical that we respond to teacher and faculty readiness and professional development.

Third, I think it is important we clarify funding issues for K-12 e-learning.

And, last, it is important that we create additional public policy partnerships all over the country to help stimulate further e-learning.

[The prepared statement of David A. Spencer follows:]

PREPARED STATEMENT OF DAVID A. SPENCER, PRESIDENT, MICHIGAN VIRTUAL UNIVERSITY AND JAMEY T. FITZPATRICK, VICE PRESIDENT, MICHIGAN VIRTUAL UNIVERSITY

"THERE IS NO GOING BACK. THE TRADITIONAL CLASSROOM HAS BEEN TRANSFORMED."[1]

Fundamental to the success of today's *Knowledge Economy* is how companies obtain, train and retain knowledge workers. Industry experts recently assessed the knowledge enterprise industry, which includes both training and education, at more than $2.2 trillion. From kindergarten to corporate America, the learning industry is exploding, fueled by global competition, a shortage of skilled workers, the growth of the Internet, cost pressures and the rapid pace of change in what we need to know.

[1] The Power of the Internet for Learning: Report of the Web-based Education Commission to the President and the Congress of the United States, Washington, D.C., December 2000, p.1.

The fastest-growing trend to emerge is e-learning, with Merrill Lynch projecting the online component alone to grow from $9.4 billion to $53.3 billion by 2003, a 54 percent compound annual growth rate (CAGR).[2] International Data Corp. predicts an 83 percent CAGR in the corporate e-learning market alone in that time period, with e-learning in the information technology field accounting for almost half of all training expenditures.[3]

On the education front, colleges and universities represent the most wired community on the Web with more than 90 percent of college students accessing the Internet and spending 85 percent of their online time on academic pursuits. More than 2.2 million college students are expected to enroll in distributed courses next year, up from 710,000 in 1998 and representing a 33 percent CAGR.[4]

About Michigan Virtual University (MVU): Michigan Virtual University delivers e-learning to corporate, higher education and K-12 audiences via the World Wide Web, intranets and other electronic technologies. It is a vehicle for updating Michigan's workforce to help keep businesses, jobs, workers and students in Michigan. It is both a catalyst for expanding the use of electronic learning technologies and a channel through which Michigan schools, colleges, universities and corporate course providers can make their e-learning offerings available to the Michigan public.

Established in 1998 by Governor John Engler and the Michigan Economic Development Corp.[5], Michigan Virtual University is a private, 501(c)(3) Michigan corporation governed by a board of directors representing the Michigan employer community, educational leaders and state government. MVU programs and services are available for all kinds of training needs, but have special focus on Michigan's core industries, including manufacturing, information technology and health care.

Among MVU's primary goals:

- Establish MVU as the primary front door for distributed learning.
- Expand the capacity of Michigan education and training providers to use technology to provide more convenient and cost-effective distributed learning and training opportunities for Michigan's core industry sectors.
- Coordinate the development and deployment of common standards for technology and student access systems, as well as high-quality online products and services.
- Facilitate the implementation of K-12 and higher-ed technology initiatives that will accelerate their impact and spur the growth of a powerful distributed learning infrastructure spanning the many education systems of the state.

CORPORATE EDUCATION AND TRAINING FOR WORKFORCE DEVELOPMENT

A major goal for Michigan Virtual University is to facilitate collaboration between business and education in support of Michigan's "Smart State" strategy to become a major high-tech industry center and exporter of information technology products. Accordingly, MVU has developed partnerships with such corporations as Ameritech, Consumers Energy, Steelcase, General Motors, Ford Motor Co. and DaimlerChrysler to develop a model for modernizing job training and creating synergy between a tech-savvy workforce and Michigan business.

MVU is the parent corporation of the Michigan Virtual Automotive and Manufacturing College and the Michigan Virtual Information Technology College. In the context of economic development, MVU works to help companies develop an e-learning strategy that will keep their workforce up to date and the company competitive. The goal always is to design solutions that provide exactly the training that is needed, when, where and how it is needed.

Through online training, companies increase the likelihood of getting training to employees wherever they live and work, retain valuable employees longer, and stretch their training budgets by saving travel costs. Employees appreciate the scheduling flexibility of anytime, anywhere learning and the expanded training opportunities that will enhance their value to the company and their potential earnings.

During the last three years, MVU has engaged in a number of unique projects and partnerships. Our testimony today will focus on major current initiatives:

HIGHER EDUCATION PARTNERSHIPS & PROGRAMS

The Michigan Virtual University supports a public policy role in accelerating the capacity of Michigan higher education institutions to develop and deliver Web-based

[2] Merrill Lynch, The Knowledge Web, May 23, 2000, p. 3.
[3] WR Hambrecht + Co, Corporate e-Learning: Exploring a New Frontier, March 2000, p. 25.
[4] Merrill Lynch, p. 171.
[5] previously the Michigan Jobs Commission

training and education opportunities. MVU initiatives to support this important statewide role include marketing and promotion activities, providing a supportive "incubator" environment for the development and delivery of Web-based courses, faculty and staff development programs, instructional design consulting, and quality assessment tools. MVU staff often serve as key external catalysts to initiate campus-wide dialogs on the institutional and faculty issues surrounding virtual teaching and learning.

The MVU Web-based products and services offered to our partner institutions are all designed to address identified barriers to the adoption of online teaching and learning. MVU offers institutions the ability to conduct their first online programs using a technology infrastructure of servers, course management software, e-commerce systems, and a help desk to significantly offset initial costs and risks of such trials. An online faculty development program has been successful in teaching faculty to prepare instructionally sound online courses and to engage students in interactive activities. A recently developed tool, the Michigan Instructional Design Evaluations System, provides an objective system for faculty to assess the instructional design quality of courses. The MVU course catalog provides a statewide portal to all of the online, credit-bearing courses available from our institutional partners. At present, more than 750 course offerings can be accessed by student users and represents an estimated of over 12,000 students enrolled in online courses each semester.

MVU has established key partnerships with the state's institutions including signed agreements with the 15 public four-year universities through the Presidents Council, State Universities of Michigan, the 28 community colleges through the Michigan Community College Association (MCCA), and selected private and independent colleges. One of the key success stories has been the support of the community college MCCA-Virtual Learning Collaborative, a model program for inter-institutional collaboration in the areas of common tuition, course marketing, student services, credit transfers and articulation. MVU also plays a key statewide role in identifying and assessing opportunities for the export of Michigan-based online training and education to global markets. An international partnership, the International Open University for Distance Learning, has been established to facilitate these international opportunities.

Career Guidance System: Last month, Michigan Virtual University launched the first phase of TalentFreeway, a comprehensive, user-friendly online career guidance system funded by the Michigan Dept. of Career Development. TalentFreeway is a one-stop Web portal for Michigan employers and residents for exploring and finding Michigan talent for jobs. It unites and capitalizes on the synergy of online state-funded tools that previously operated independently of each other: the Michigan Talent Bank, the Michigan Education Development Plan, Career Education Consumer Report, Michigan Occupational Information System and MVU.

Designed for all ages, TalentFreeway directs individuals to the appropriate education and training resources to fulfill their career goals and aspirations. It also includes a one-of-a-kind distance learners' orientation tool, designed to improve their chances for successful online learning performance and achievement.

- Employers use the TalentFreeway to locate new employees through the Talent Bank and the intern matching system. They use the Career Education Consumer Report to review training programs for employees' retention and skill upgrades. Michigan Virtual University offers an online catalog of training programs and hundreds of credit courses and degree programs from Michigan colleges and universities.
- Parents can encourage their children's career exploration through interest assessments, occupational descriptions and biographies through the Michigan Occupational Information System and Educational Development Plans. They can also help themselves transition into a new career or access training.
- Teachers and guidance counselors use TalentFreeway to advise students about careers, encourage parental involvement at home through the Internet, create an education and training plan, take online courses and search for internships.

MVU's career guidance system enables organizations in Michigan and across the nation to customize the Internet Web portal for their own audiences.

MVU has engaged state and federal agencies, employers, employees, students, teachers, parents, Chambers of Commerce and many other groups to ensure that the current site and future iterations meet the diverse career planning and exploration needs. In addition, the CGS has formed an advisory council of nationally recognized career counseling experts.

Michigan Virtual High School: In 2000, the Michigan Legislature and Governor John Engler appropriated $18 million to MVU over three years to create and operate the Michigan Virtual High School. The goals of the new entity are:

- Expand curricular offerings for high schools across Michigan.
- Create statewide instructional models using interactive multimedia Internet-based tools for distributed learning at the high school level.
- Provide students with opportunities to develop skills and competencies in online learning.
- Offer high school teachers opportunities to learn new skills and strategies for developing and delivering instructional services.
- Accelerate Michigan's ability to respond to current and emerging educational demands.

In spearheading the Michigan Virtual High School, MVU engaged a coalition of K-12 education groups, including the Michigan Association of Secondary School Administrators and the Michigan Education Association, the state's largest teacher union.

The Michigan Virtual High School will target all public and private students in grades 9-12, students who are being schooled at home, adjudicated youth enrolled in institutional facility programs, and expelled and homebound students receiving supervised instructional support. The core academic focus areas will include at-risk programs, Advanced Placement and dual enrollment courses, information technology courses, and special interest or enrichment courses.

The Michigan Virtual High School will not become an independent high school offering its own diplomas, nor is it intended to be a replacement for existing classroom-based instruction in Michigan public high schools. Instead, it serves as a supplemental education delivery mechanism to enhance and expand instructional opportunities for Michigan high schools and serve as a resource for rural, urban and suburban high schools throughout the state. Starting this spring, teachers, students and administrators at Michigan K-12 schools will have free access to more than 700 online information technology courses through the MVU and the Information Technology Training Initiative (see page 8).

Advanced Placement Academy: MVU has forged a partnership with Apex Learning, Inc, a Seattle based company that designs and develops high quality online courseware in the area of Advanced Placement. Prior to the agreement, more than 40 percent of Michigan high school students did not have access to Advanced Placement courses at their local high school. The MVU/Apex agreement allows any high school to have access to online AP courses. In Michigan, more than 145 schools and 962 students have already benefited from MVU's online course scholarship offer for the 2000-01 school year. In addition, nearly 10,000 students have signed up for the Apex-developed College Board-related AP Exam Review services, available online March 12 at no cost to any Michigan high school student. The review is a self-paced, online tool that includes diagnostic testing, quizzes, practice exams and a self-study plan.

Nearly 200 Michigan high school AP teachers have registered to use the free AP online Class Tools product, which provides teachers with high end multi-media content, including course units, tests, quizzes and reference materials for their individual classroom use.

Oracle Internet Academies: MVU is working with the Oracle Corporation to establish as many as 15 Oracle Internet Academies over the next two years that will function as robust labs for Michigan high school students with online and teacher-facilitated learning in popular IT applications. Oracle will provide one teacher from each participating school with intensive, year-long training that includes several online courses and residential training at Oracle's Instructors Institute. Oracle will provide materials, technical support and certification exams for up to 30 students at each participating school. Although created with Oracle, the academies will provide non-proprietary instruction in database development, including SQL and PL/SQL, Java programming and Java database applications.

U.S. Army Project: The U.S. Army has awarded a contract to Pricewaterhouse Coopers to provide distance education for an estimated 80,000 soldiers over the next five years. The contract unites more than a dozen technology providers and an initial set of 29 higher education partners, including Michigan Virtual University, to create Army University Access Online (www.earmyu.org).

Under a fee-for-services contract, MVU will provide the partnership with a set of education planning tools to assist the soldiers/students in exploring their career interests, academic achievements, and learning styles in order to make informed career and education choices. These tools will be customized from the newly developed MVU career guidance system and the Distance Learners Orientation Tool. MVU also will serve on the project's Council on Academic Management, which will provide guidance on the academic standards and policies to govern the selection and monitoring of participating education partners. MVU will represent the interests of all Michigan higher education institutions through this seat on the Academic Council

and identify opportunities for them to partner with MVU in program development for the Army's online university.

Ameritech Technology Academy: A coalition of Michigan educational organizations have created the Ameritech Technology Academy, an innovative program that will train Michigan K-12 teachers on how to effectively use and integrate technology into their curriculum and instructional strategies. This program will create a core of 2000 education experts who will work with schools to help integrate technology in the curriculum and use technology in a sustained and effective manner. Through the Academy, four-person educational teams will learn the latest techniques and strategies for putting technology to work in all areas of the curriculum. In addition to the technology, the teams will consider how to help others in their building put technology to greater use. Each team consists of two teachers, a building-level administrator and a media specialist, teacher, or other person able to facilitate change among their colleagues. The Academy is funded primarily by a grant from Ameritech with additional support from Michigan Virtual University and the Michigan Dept. of Education.

Information Technology Training Initiative: On March 12, Gov. Engler will formally announce the Information Technology Training Initiative. Through a partnership with NETg (National Education Training Group), a worldwide provider of online courseware, MVU will provide more than 700 Web-based information technology (IT) courses to as many as 850,000 students, faculty, K-12 teachers and staff. These stand-alone, self-paced courses will be made available free to individual educational institutions, which may add instructional wraparounds such as teacher instruction, supplementary content, customization and communication tools. Students and teachers will access the courses through their schools, at no cost, via the MVU Web site. The Information Technology Training Initiative will allow students greater access to IT training and enable teachers and faculty to integrate technology and online education into any and all of their courses and curricula. The courses cover all types of IT topics, including:

- End-user topics, such as PC basics, Internet navigation, word processing, spreadsheets, databases, e-mail programs and desktop publishing.
- Infrastructure topics, such as programming languages, client/server development tools, relational databases, intranet development and mainframe issues.
- Certification learning paths. (Microsoft, Oracle, Cisco and Novell; certification exams are third-party administered.)
- Management and professional development.

Teacher Technology Initiative: In July 2000, Gov. John Engler and the Michigan Legislature approved $110 million in funding for the Teacher Technology Initiative. The goal of the program is to support teaching and learning in Michigan's public schools and public school academies through a significant one-time investment in Michigan's K-12 teachers. To accomplish this, teachers will be provided with a personal computer, software, remote Internet access (dial-up) and Web-based professional development. Michigan Virtual University was asked by Governor Engler and the Michigan Legislature to provide leadership in working with state government and the entire education community to oversee the design and development of this project.

MVU has completed a competitive review process to select five quality vendors, including Apple, Compaq, Dell, Gateway and IBM. Of the 90,000-plus K-12 teachers in Michigan, more than 65,000 have completed a required Web-based assessment designed to determine their level of comfort and proficiency in using technology in the classroom. In conjunction with the Michigan Education Alliance, MVU is creating a Web site that will eventually be a statewide portal for education groups. In the meantime, the site (www.ClickOnK12.org) will be the default on all of the computers delivered through the Teacher Technology Initiative.

CONCLUSION:

The e-learning movement has resulted in a great deal of high-level public policy discussion nationwide at K-12 schools, colleges and universities. Michigan Virtual University supports the findings and recommendations found in "The Power of the Internet for Learning," the recently published report of the Web-based Education Commission to the President and the Congress of the United States.

Expanded Web-based educational opportunities are causing many of us to re-examine existing local, state and federal policy issues. The private sector is also playing a major role in shaping the future of how this nation's educational institutions deliver education and training. As they relate to online education and training, we believe the following six policy issues are the most significant over the next 2-3 years:

1. Clarify and address important accreditation and quality issues for K-12 and higher education online programs and services.
2. Examine and respond to teacher and faculty readiness and professional development needs.
3. Develop strategies to increase student preparation for future online learning opportunities
4. Clarify funding issues, especially as they relate to K-12 per-pupil funding for online student enrollments.
5. Study the implications of online education for home-schooled children, charter schools and special needs populations.
6. Create expanded opportunities and incentives to stimulate new and innovative public/private partnerships.

Mr. UPTON. Thank you very much.

Dr. Domenech.

STATEMENT OF DANIEL A. DOMENECH

Mr. DOMENECH. Mr. Chairman, Congressman Davis, and other members of the subcommittee, I am the Superintendent of the Fairfax County Public School System, with 160,000 students, the 12th largest school district in the nation. We serve 13 percent of our State's elementary and secondary students, and our annual operating budget is approximately $1.5 billion. I am also a former President of the American Association of School Administrators, the professional organization of more than 14,000 local superintendents and public school leaders on whose behalf I appear before you today.

Our system enjoys the support of 200-plus business partners, with 50 percent of them offering mentoring and tutoring to support academic achievement, about 40 percent support special events, and the remainder allow us to conduct career day programs, job shadowing experiences, and other arrangements.

My testimony will focus on three areas: Increased distance and interactive learning, professional and technical studies through our relationship with Cox Cable, and student programs aid professional and technical academy certifications, the movement of education beyond our classroom walls.

Cox Cable, with whom we have a 20-year relationship, provides us with funding and support for six cable channels. Three are internal for such activities as instruction in Japanese, downloading of titles from our video library, staff development, monthly programs for our parents who speak Korean, Spanish, Vietnamese, Farsi and Arabic, and electronic field trips to the Berlin Wall, the Smithsonian, NASA, and many other interesting projects.

Microsoft Corporation allows us to train students in network administration, with the aim of full Microsoft certification. One young person became the first student to successfully pass the Cisco Certified Network Program, the A+ Certification Program, and the Microsoft Certification Systems Engineering, all in the same year. And this was a student who may have fallen through the cracks had it not been for our business partnerships.

We are one of just 30 national pilot projects supported by the Oracle Corporation for data base mainframe certification, and more than 100 of our students are working in paid technology internships. Through partnerships with our County Offices of Partnerships and Family Services, we have created computer learning centers with state-of-the-art computers acquired through business

partner donations. You will hear later from Rae Grad, who is one of our witnesses today, and PowerUP, who is one of our partners in that endeavor.

Teachers report positive learning gains for children using these centers and, interestingly enough, vandalism in the areas where they live has dropped 33 percent.

Through the Offices of Family Services, our 5th grade classes are participating in wireless computer labs, which is becoming a major initiative in our school system, and each student has been given a laptop computer and printer for home use, coupled with free Internet access provided by Verizon. Attendance and behavior improvements are credited to this kind of program.

We urge Congress to definitely continue the FCC's e-rate program and, as Congressman Markey pointed out before, we don't mind if we call it the "ED Program", which provides the Internet access that makes our partnerships work. Even though we are, some may consider, a wealthy jurisdiction, Fairfax has significant areas of poverty with our school poverty rates averaging anywhere from 20 to 82 percent, depending on the locality.

Through the e-rate, our district has received more than $8.5 million annually in service discounts over the past 3 years, and our businesses also provide vital infrastructure support—for example, Capp, Gemini, Ernst and Young gave us $50,000 in pro bono technology assessment consulting.

We are experiencing a new wave of partnerships in public schools, and as technology continues to advance at high speed, schools are receiving partner benefits to keep our schools on the cutting edge of integration and technology in our classrooms.

Even our Education Foundation, which is a group made up of business companies in our area, have earmarked a $10 million project for the next 3 years to address technology needs and infrastructure in a number of our schools. So, we are highly appreciative of the incredible support in Fairfax County that we receive from our business partners. Thank you.

[The prepared statement of Daniel A. Domenech follows:]

PREPARED STATEMENT OF DANIEL A. DOMENECH, SUPERINTENDENT, FAIRFAX COUNTY PUBLIC SCHOOLS

Mr. Chairman, Congressman Markey and members of the committee. My name is Daniel Domenech. I am the Superintendent of Schools for the Fairfax County Virginia School System, a district with more than 160,000 students. We serve 13 percent of our state's elementary and secondary students. And we are the 12th largest school system in the nation, in a county with nearly one million citizens. Our annual operating budget is $1.4 billion.

In addition I am a former President of the American Association of School Administrators, the professional organization representing more than 14,000 local superintendents and public school leaders and on whose behalf I appear before you today.

Our students enjoy the benefit and support of 178 public and private partnerships in the advancement of their education. Of that total, 130 are with individual businesses, corporations and professional business associations. Partners from the technology sector represent 56 of our supporters.

Why are these relationships valuable? Because the arrangements are mutually beneficial, assisting students with the new and thriving world of electronic communications. In addition we receive professional development for our staff. All the while allowing partners to share their values, objectives, resources, roles and responsibilities toward the goal of increasing student achievement and delivering positive public visibility for our public sector champions.

From Cox Communications and Cisco Systems, Microsoft and Lockheed Martin, to Oracle and Xerox, private/ public partnerships have been playing an increasing role in the advancement of education technology.

These friends of public education have contributed millions of dollars in man-hours, services and grants that help us, even more, make a more difference in the lives of our young people. Today, I am going to talk about our partnerships in three areas: increasing distance and interactive learning, encouraging students towards network certification and lastly, bringing education technology beyond the classroom walls.

Close to 20 years ago, our district began partnering with the Fairfax cable system, which is now Cox Communications. As a part of Cox's plan with Fairfax County, a certain percent of their revenue goes directly back to the county for use in our schools. We have been able to use this funding to develop a state of the art cable station.

In addition to the funding, Cox Communications provides our district with six channels; three of which are held for intra-district services; these internal television operations allow us to originate and record more than 250 original programs per year, for school learning use. More than 25 school board meetings are telecast via this service annually.

Thanks to Cox we have 11 full time producers and directors, six engineers and video designers, two to run the system's master control; and several who provide media, training and programming services. Every classroom in our 234 schools and education centers is wired for cable; creating a symbiotic relationship that has benefited many our schools, in much the same way as the Instructional Fixed Television Service licenses and partnerships have aided thousands of schools across the country.

Because of Cox we are able work collaboratively with students and parents to:

- Present a biweekly news program;
- Offer monthly adult and community education programming in Korean, Spanish, Vietnamese, Farsi and Arabic;
- Provide assistive technology for students with disabilities;
- Offer live mentoring programs;
- Deliver daily one-hour classes in Japanese and Advanced Placement (AP) Spanish Literature instruction to students;
- Furnish enrichment programs in literature, juvenile justice, music and geography;
- Take students—again, ours and others across the nation—on "electronic field trips" to such places as the Berlin Wall, with the assistance of Lufthansa airlines; the Smithsonian and NASA operations;
- Offer parents—through their home or public library access computers—the opportunity to work more closely with their child and his/her child's own teacher to develop the content and technology of their child's educational program;
- Develop and maintain relationships with the state department of education in such arenas as AP distance learning classes; and
- Allow in-school, interactive professional development to teachers, as they work to refine classroom curriculum.

Our youngsters, several times each year, are able to meet and speak with noted authors of children's books, courtesy of our "Meet the Author" cable program. Caldecott Award-winning author, Paul Curtis, opened young people's eyes to what is possible, if you work hard and are determined to succeed, by relating his story on how he was transformed from an automobile plant laborer to a successful writer.

Shelley Snow, a gifted writer who often pens stories about the snow and dog racing stories of Alaska, prompted a student to ask, "How do you write in Alaska with all that snow?" Real learning takes place from such humorous exchanges.

And this year, Fairfax County Students, will talk with Jon Scieszka, who wrote the hilarious book, "Stinky Cheese Man." Who says learning can't be fun? That approach is essential, because we want every child to succeed, to leave no child behind. A bored student, who doesn't "get it" and doesn't care, can lead to another dropout statistic, another "failed" life; another student "left behind".

The other three Cox education channels give us the opportunity to provide information from our schools—programs, performances, workshops, student success stories, and school needs—to every Fairfax citizen with Cox cable.

The Fairfax County Public Schools have also been successful in partnering with software companies. Thanks to the Microsoft Corporation, we are enhancing our program that trains our students in network administration, through free server software and reduced rates for students and teachers who seek Microsoft certification. We currently have more than 300 students enrolled in this program. This partnership is working to encourage our youngsters toward full network certification.

Similarly, Oracle is working with us—and we are just one of 30 such projects in the nation—on a database mainframe certification program. This unique partner has generously provided extensive training for two of our teachers. Oracle will be providing another training session this coming year. Oracle provides us textbooks and all training for students in the program (125 this year), teacher assistance for setting and running servers, and waiving of the certification fees normally required for students and teachers.

Finally, we are beginning one of the most important transition evolutions through deliverance of this technology beyond the classroom walls. Over the past several years, our district has partnered with the Fairfax County Office of Partnerships, their office of Family Services and their office of Private Industry to create Computer Community Learning Centers. These centers have developed inside apartment buildings and shopping centers. Essentially they are computer labs used by the surrounding community, especially our students. These labs are filled with refurbished computers that have been donated for this project. Believe it or not, the local fire department has taken the lead in helping to restore these computers. With the help of of Booz-Allen, members of the local fire department have been given the opportunity to become certified technicians.

However, the beauty of this program is designed in the benefit it gives to our students. Each computer contains programming that is aligned with the curriculum taught in our schools. A student earns points for every hour he/she spends in the Computer Community Learning Center. Upon earning a specified sum of points, that child is able to take a computer home.

Once these machines are in students' homes their learning is further enhanced, thanks to our partnership with Star Power, with free access to the Internet. Just two days ago, we awarded computers to two 4th grade students, who work on stations at the Sacramento site in a local shopping center. This great gift of empowerment to those students would not have been possible without community partnerships.

That one example is evidence of the importance of placing the technology where learning occurs.

A pilot project, currently in service, with the assistance of the Fairfax County Office of Family Services, allows a fifth grade class—at Woodley Hills Elementary School—to participate in a wireless computer lab. Each student in the class has been given a laptop computer to take home with them. Through grant money, we have been able to provide each of those students' homes with a printer. Via partnership with Verizon, each student has free internet access from home.

The child's computer has become an integral part of classroom instruction. Students have been able to assimilate technology as part of the learning process. Though this program has only been in this class since November, we are already seeing improvements in attendance rates and social/ emotional behavior. We expect to find academic improvements by the end of the year.

Placing the technology in schools, is paramount, if we are to allow partnerships to flourish.

The Federal Communications Commission E-Rate program offers school districts and libraries discounts climbing to 90 percent of the costs for telecommunications services, Internet access and internal connections (wiring, network hardware and network maintenance). Within our school district, we have individual schools ranging from 20 percent to 82 percent. Over the last three years, the E-Rate program has afforded Fairfax County Schools more than $ 8.5 million in discounted services. Left untold and behind the scenes, Fairfax benefits from millions of dollars of leveraged funds our district and community have put toward telecommunication services and products.

Finally, the effect of public/private partnerships in education technology has forced us to develop the content and technology together. It is useless to have new avenues for technology, unless there is applicable education content to use with those opportunities.

As technology continues to advance at a high speed, schools across America offer ample evidence that partnerships vastly expand public school learning horizons.

Thank you, Mr. Chairman. I am happy to entertain any questions you may have.

Mr. UPTON. Thank you very much. I just note that since the President calls me "Freddy Boy", maybe we ought to call this the "Ed-E" program.

Mr. DOMENECH. That will work.

Mr. UPTON. I know that's not news to you either.

Sister McDonald, welcome to the committee.

STATEMENT OF SISTER DALE McDONALD

Sister MCDONALD. Good morning. I am Dale McDonald, Director of Public Policy and Educational Research at the National Catholic Educational Association in Washington, DC.

Mr. MARKEY. Can I first point out that I am a graduate of the Immaculate Conception Grammar School, Catholic Boston College and Boston College Law School?

Sister MCDONALD. I am a B.C. grad also, although I am from New York. I am a member of the Sisters of the Presentation from New York.

Mr. MARKEY. You know that B.C.'s playing Villanova at noon today on ESPN.

Mr. UPTON. The Wolverines are on at 4:30, but they are not expected to do very well.

Sister MCDONALD. NCEA is a professional membership organization. We serve Catholic educators across the spectrum of Catholic education, primarily in the 8,200 schools and the 2.6 million students that are in Catholic schools today.

I speak today on behalf of my association in particular, and the private school community in general, and I speak in support of the E-rate program and its positive impact on improving telecommunications access for students in our schools. I have been involved with the E-rate program since the passage of the Telecommunications Act, working with the Education and Libraries Network Coalition, EdLiNC, on the implementation processes that were developed before the FCC, and then working with our schools to be sure that they access the program in a meaningful way for them.

My remarks will focus primarily on what the E-rate programs has leveraged for our schools, and why I think that is so.

The focus of the E-rate was to close the educational digital divide by promoting equity and excellence in telecommunications access for everyone, and that is a key part of our participation in this program. It is the most popular of the programs in which our schools participate. We are big consumers of most of the Federal ESEA programs, but this has far greater consequences because every school is entitled to participate equally. Again, the targeted discounts are to the schools that are in most need, but those schools that may not have a high concentration of poverty but are themselves cash-poor are also able to participate. And that has been a big deal for us.

What the E-rate has leveraged for us is the increased levels of technology hardware and connectivity using both the studies done by the National Center for Educational Statistics and also the annual Quality Education Data Surveys. We have seen we have made enormous progress in very short time. And that has come about primarily because of the E-rate and the awareness it has raised in our community of the need for technology not as a frill that we used to think it was, but as an integral part of the education we offer our students.

The E-rate has also helped us to think strategically about technology for our schools where as earlier than really 3 years ago, we had some computers in some computer labs, but there was not an overall process. So, through the E-rate we had to develop technology plans which became a smart way to approach this. And then

because of the component in the application process where you certify professional development to teachers, we have begun to put a great deal of emphasis on that aspect of "if we have the stuff, then we have got to learn how to use it, and use it smartly". And we have data here in the formal remarks that look to the achievements we have made on both of those levels.

The curriculum infused with the technology is starting to become words that are in actualization in various levels across our schools, depending on the level of hardware primarily that one is able to use to access. Our least rate of growth is in the area of high speed, but that is related primarily to the ability to match what the undiscounted portion is.

The anecdotes that are provided here also look at just giving you a snapshot of the diversity of the application consequences, depending on the level of poverty at the school, and then what that has been able to—a 90-percent discount in most of our schools that are eligible for that has leveraged a great deal of attention as well as contributions and in-kind services, and so on. But what is important, even if the school gets $3500 or it gets $185,000, those are a lot of dollars for individual schools, particularly our schools where most of them are small parish schools—45 percent of our schools are in urban districts—there is not a lot of discretionary money for technology, but this has helped significantly. $2500 that is discounted on one part of the service may even lend to providing technology hardware to match.

One of the reasons that I think this program has had the most impact is the equity issue, that all of our schools are able to participate and to participate directly in this. I go back to Congressman Markey's remarks at the beginning: It is not fair to a program that we have to go through the districts trying to get a share of a Block Grant or a share of a District Grant. We have had a lot of frustration in certain districts trying to receive the equitable participation in the Federal ESEA programs. This is straightforward: You apply, albeit somewhat cumbersome the first time out but, after that, you know where you are going, what to expect, and the key part would be the funding stream as it is now. There is a predictability to it. It is one thing to get the school wired and to apply for a T1 line, but then if you don't have the circumstances in which you can support that without the discount, you are in trouble. So that has been a major part of our participation, is the reliable funding stream through the Universal Service Program.

[The prepared statement of Sister Dale McDonald follows:]

PREPARED STATEMENT OF SISTER DALE MCDONALD, NATIONAL CATHOLIC EDUCATIONAL ASSOCIATION

I am Sister Dale McDonald, PBVM, PhD, Director of Public Policy and Educational Research at the National Catholic Educational Association in Washington, D.C. NCEA is a professional membership organization that has been providing leadership and service to Catholic educators since 1904. NCEA's mission is to advance the educational and catechetical mission of the Church and provide leadership and service to its members in preschools, elementary and secondary schools, parish catechetical/religious education programs, diocesan offices, boards, colleges and universities, and seminaries who serve over 7.6 million students.

I speak today on behalf of my association in particular, and the private school community in general. I speak in support of the E-rate program and its positive impact on improving telecommunications access for students in our schools. I have been involved with the E-rate program since the passage of the Telecommunications

Act of 1996, working with the Education and Libraries Network Coalition EdLiNC as implementation processes were developed by the FCC.

The EdLiNC coalition's campaign, centering on the term "E-rate," focused attention on the intended purposes of the program: to close the education digital divide by promoting equity and excellence in telecommunications access for everyone. While the discounts are targeted to schools that serve the poorest populations, all public elementary and secondary schools, as well as K-12 not for profit private and parochial schools, with endowments under $50 million, are eligible to participate.

Impact on Catholic schools:

In general, the E-rate program helped to accomplish several significant changes in our schools. About 48% of all Catholic schools receive E-rate discounts that have enabled most of them to bring the Internet and some high-speed circuits, local and wide-area networks and distance learning capabilities into the school. Significant areas of impact can be noted since the 1995-1996 school year, before the E-rate program was enacted in the 1996 Telecommunications Act. According the National Center for Educational Statistics, in two surveys Advanced Telecommunication in U.S. Private Schools: K-12, conducted in the 1995-1996 and 1998-1999 school years, this progress can be documented for Catholic schools:

1) Increased levels of technology hardware and connectivity

Hardware and Connectivity	1995-1996	1998-1999
student-to-computer ratio	10:1	8:1
percentage of schools with Internet access	35	83
percentage of schools with instructional rooms with Internet connectivity	4	27
ratio of students to instructional computers with Internet access	174:1	19:1
percentage of schools with Internet using dial-up connections	94	65
percentage of schools with LAN networking in classroom	33	51

2) Development of technology plans:

The E-rate application process requires the applicant to have an approved technology plan with stated technology and educational goals, as well as professional development of teachers and resources needed to finance the acquisition of hardware and software to support telecommunications services. This has motivated the schools, as well as the Diocesan School Offices, to develop comprehensive plans for implementing long and short-term goals pertaining to the thoughtful integration of technology into the life of the school.

3) Professional development of teachers:

The professional development component of the E-rate required technology plans has had an impact on how schools spend their general funds budgeted for professional development of the faculty. Data collected by NCES in 1999 indicate that Catholic schools have made great strides in this area. Such information was not even solicited prior to 1998.

Professional development technology related activities provided by schools: percentage of schools that provide the following	
any advanced telecommunications training for teachers	88%
training in integration of technology into curriculum	74%
use of the Internet	66%

4) Curriculum infused with technology:

The E-rate has helped schools develop their education programs to include an Internet-enhanced curriculum in classrooms in a way that is fundamentally changing how students learn. Reported teacher use of technology to enhance the learning experience for students is now close to half; but technology and connectivity needed to provide distance learning opportunities is low. This area requires the highest and most expensive levels of connectivity and hardware and is the area to show the lowest rate of growth.

Technology use in teaching/learning activities	
percentage of teachers regularly using computers/telecommunications for teaching	48%
percentage of schools that provide distance learning opportunities for students	7%
percentage of schools that provide distance learning professional development activities for teachers	16%

Anecdotal reports on how the E-rate has impacted individual school recipients:

The levels of participation for our schools vary widely, based on a number of factors. Schools in the 90% -80% discount levels, based on family income, have been able to obtain substantial discounts on internal wiring that allowed them to build an infrastructure that provides not only network connectivity within the school and among schools, but also opens up the classrooms to distance learning opportunities. Schools receiving smaller discounts (20-40%) have also been able maximize their resources to bring technology into their schools in classrooms and resource rooms. In almost all schools receiving the E-rate discounts, those dollars have leveraged others by way of additional contributions and grants from donors who want to support the potential they see being developed. Three scenarios illustrate this point:

Cathedral High School in Boston, Massachusetts serves an inner-city, ethnically diverse low income population that entitles the school to a 90% E-rate discount. These discounts have enabled the installation of network connections throughout the school, use of a T-1 line to connect to the Internet, and development of infrastructure that is bringing computers into all of the classrooms. It has enabled the school to participate in the Virtual High School program that allows students to supplement curricular offerings with distance learning classes. E-rate funding has also enhanced the school's community based programs that serve the neighborhood immigrant populations with ESL classes, computer training and summer school programs that make use of and benefit from Cathedral's augmented infrastructure. The program has also attracted other grants, enabling Cathedral to provide professional development training for its teachers and the purchase of the hardware and software not covered under the E-rate program.

St. Mary's School in Richmond, Virginia, receives a 40% discount. Although it is located in an area with one of the highest per capita incomes in the country, the school itself does not have a great deal of discretionary income. St. Mary's has used the E-rate to defray the costs of phone lines for dial-up connections and Internet connectivity and has enlisted its parents in developing a technology policy and raising funds for hardware. Parents have considerable input into how technology is integrated into the curriculum and report that there has been increased levels of teacher/student/parent communication. The professional development required by the E-rate application process resulted in St. Mary's placing a priority on providing training for teachers to be able to use technology in the classroom to promote higher levels of learning and the development of critical thinking skills in the students.

St. Francis Xavier School in Moundsville, West Virginia is a small K-8 school in a northern West Virginia community that has experienced the loss of a once vital industrial economy. The 40% discount level enabled the school to connect each classroom to the computer lab and Internet. Most significantly, E-rate dollars have attracted additional funds. They received a grant to purchase a scanner, digital camera and web design software to create a website and publish a school newspaper. Also, the E-rate initiative, has prompted the diocesan school office to begin investing in technology for all of the schools by providing grants and hiring a technology coordinator for the diocese. Students are using the technology in the classroom to do research and learn how to use information discriminatingly and effectively. To further parental involvement in students' learning, the school has planned classes for parents to learn how to use the Internet and the software their children are using.

It is important to keep in mind that these discounts represent significant dollars for our schools. Despite the myths that prevail concerning private schools, most Catholic schools do not have large amounts of discretionary funding. In order to keep tuition affordable for parents, particularly in urban areas, fundraising must occur just to meet the general operating costs of the school. In the not too distant past, technology was considered a frill that most schools could not afford. The awareness that the E-rate program has raised in our schools of the necessity of technology access for students to prepare them for life and work in the 21st Century has leveraged more creative and aggressive development activities to acquire technology for the schools.

Reasons for this impact:

The E-rate has been one of the most successful programs in terms of attracting participation of Catholic schools as well as the other religious and independent schools. A key component of that success has been the access and equity issues associated with the E-rate program structure and administration.

High levels of participation, in comparison with ESEA and other government programs, may be attributable in large part to the fact that it is a program that does not require schools to go through the local public school district and compete for a fair share of the resources. Many of our schools experience a great deal of frustration in dealing with multiple school districts when trying to obtain the equitable

portion of ESEA services to which their students are entitled. While the E-rate application processes may be a bit cumbersome for first time applicants, the advantage is that school administrators are able to apply directly to the Schools and Libraries Division of the Universal Service Administrative Company and request the services they know they need, want and can afford—and know precisely where the application goes and what to expect as the process unfolds. This allows administrators to plan wisely and begin to implement services in a timely manner.

There is not much public assistance available to our schools at the state and local levels. Most of the technology assistance provided to public schools is not available to private schools because state and local government-funded technology bond issues or other initiatives specifically exclude private school participation. This is due in large part to Blaine Amendment type language in state constitutions that specifically disallows any assistance to our schools. While corporate sponsors have made some contributions to private schools, their efforts are few and not sustained. Therefore, the E-rate program is a source of support that will provide the consistent assistance that is necessary to facilitate effective long-range technology planning and implementation.

Because the E-rate is not a U.S. Department of Education federal program that triggers church-state issues, schools can apply directly to USAC on an equitable basis with their public school counterparts. Catholic and other private schools do not have to negotiate with state and local education agencies, subjecting them to the entanglements of federal regulations that do not exist under the current E-rate structure. The E-rate program has worked very well for all schools, particularly those in the private sector, under the administration of the FCC, the appropriate entity to administer a telecommunications program.

Retaining and expanding opportunities for improving access to new and innovative technologies for all students, regardless of the schools they attend, must be part of any new legislative initiatives. The ideals of the E-rate program—education, excellence and equity for everyone—have made a significant impact on learning opportunities for students, particularly those in Catholic, other religious and independent schools.

Mr. UPTON. Thank you.

Ms. McHale.

STATEMENT OF JUDITH A. McHALE

Ms. MCHALE. Good morning, Mr. Chairman and members of the subcommittee. I am Judith McHale, President and Chief Operating Officer of Discovery Communications, the parent company of the Discovery Channel, The Learning Channel, Animal Planet and 30 other television networks around the world. I also serve as Chair of Cable in the Classroom, the cable industry's educational centerpiece. In addition, I serve on the Maryland State Board of Education, giving me a unique perspective on these educational issues from the public as well as the private sector.

I want to talk this morning about the contributions the cable industry is making to enhance the quality of education in our nation's communities and the industry's vision of equipping classrooms with new technologies so that we can strengthen our children's learning experience.

Over the last 12 years, cable companies and cable programmers, through Cable in the Classroom, have provided free cable connections and more than 500 hours per month of commercial-free educational programming to over 80,000 schools in the United States. Forty national cable networks and 8500 local cable companies have contributed over $100 million annually, or more than $1 billion over the last decade, to this public service initiative.

Here is how Cable in the Classroom works. First, a community's local cable company provides free cable connections and free cable service to any accredited K through 12 school. Second, cable networks, including Discovery, CNN, Nickelodeon and the Weather

Channel air special, commercial-free programs designed specifically for use in the classroom. Once a school begins receiving the service, teachers have at their disposal a vast array of educational programs that can supplement their curriculum and offer students a visual teaching aid that brings subjects to life.

Looking forward, let me share with you today how the cable industry is continuing to make a difference as new technologies develop which will enhance our educational system. First, by increasing access to broadband technologies across the digital divide; second, by providing compelling and informative content on air and online; third, by ensuring privacy and safety of our students online; and, fourth, by strengthening professional development to help our teachers learn to use new technologies and teaching methods effectively.

For schools, the quality of Internet access is critical. Broadband access will be the new standard. Slow, unreliable connections that cannot support interactivity or rich multimedia content will no longer be sufficient.

Toward this end, the cable industry has developed an initiative called High-Speed Education Connection. Under this program, cable companies are deploying broadband technology including free cable modem and high-speed Internet access to libraries and K through 12 schools.

The second challenge is to build on the programming that Cable in the Classroom has provided for so many years to ensure there is the appropriate level of informative, interesting and usable content online. Most of the 40 Cable in the Classroom programmer members offer extensive online resources for educational purposes, and Cable in the Classroom online serves as both a clearinghouse for free educational resources offered by the cable industry and as a portal linking teachers to these resources.

A third challenge is ensuring that what our kids see online is safe, proper and positive. The Internet carries with it danger as well as promise.

The cable industry provides special resources and training to help parents and teachers feel safe and productive in cyberspace. For example, Cable in the Classroom recently launched a program called Take Your Parents to Cyberschool. With guidance from the National Association of Elementary School Principals, Cyberschool uses an interactive online service to show children and parents how to find safe, educational resources on the Internet.

Simply installing technology in classrooms is not enough. Our teachers and educators must have the capabilities to use technology effectively and incorporate its usage into the daily rhythms of their classes and lesson plans.

To address this issue, in 1998 we launched the Cable in the Classroom Professional Development Institute, a series of hands-on computer workshops offered to educators across the country at no cost to schools. These interactive sessions introduce educations to the vast curriculum resources and services of cable and help educators make effective use of video and the Internet.

In addition, the cable industry has launched WebTeacher, a comprehensive, interactive online tutorial that includes strategies for

navigating the Internet and finding the best web sites for classroom instruction.

I have a personal and deeply held passion for improving educational opportunities for our children. The cable industry shares this goal and is committed to making certain that students of all ages have access to the most advanced technologies and the best and most compelling educational content available. Thank you.

[The prepared statement of Judith A. McHale follows:]

PREPARED STATEMENT OF JUDITH A. MCHALE, PRESIDENT AND CHIEF OPERATING OFFICER, DISCOVERY COMMUNICATIONS INC.

Mr. Chairman and Members of the Subcommittee, I am Judith McHale, President and Chief Operating Officer of Discovery Communications Inc, the parent company of Discovery Channel, The Learning Channel, Animal Planet and 30 other networks around the world. I also serve as Chair of *Cable in the Classroom,* the cable industry's educational centerpiece.

I would like to talk this morning about the contributions the cable industry is making to enhance the quality of education in our nation's communities and the industry's vision of equipping classrooms in every state with new technologies so that we can strengthen our children's learning experience. 1Over the last 12 years, cable companies and cable programmers, through *Cable in the Classroom,* have provided free cable connections, high speed Internet access and more than 546 hours per month of commercial-free educational programming to nearly 81,000 schools in the United States. Forty national cable networks and 8,500 local cable companies contribute over $100 million dollars annually to this public service.

Here is how *Cable in the Classroom* works. First, a community's local cable company provides free cable connections and free cable service to any accredited K through 12 school. Second, cable networks, including Discovery, CNN, Nickelodeon and the Weather Channel air special, commercial-free programs designed specifically for use in the classroom. Once a school begins receiving the service, teachers have at their disposal an array of educational programs that can supplement their curriculum and offer students a visual teaching tool that brings subjects to life.

As we move forward to address the opportunities and challenges of today's Information Age, it is important to recognize the research that suggests appropriate use of technology can result in significant improvement in student development and increased academic achievement. The latest research demonstrates that school improvement programs that employ technology for teaching and learning yield positive results. Given that many schools and classrooms have only recently gained access to technology, the positive outcomes of these studies suggest a future for education that has only just begun.

How can the cable industry make a difference as we adapt new technologies to enhance our educational system? Let me share with you today four areas where the cable industry can serve teachers, educators and communities to meet today's lofty ambitions:

- First, by increasing access to broadband technologies across the digital divide.
- Second, by providing compelling and informative content on air and online.
- Third, by ensuring privacy and safety of our students online.
- And, fourth, by strengthening professional development to help our teachers learn to use new technologies and teaching methods effectively.

An integral part of school improvement in the 21st century will be student and teacher access to the Internet. Universal access to the Internet will help end the isolation of teachers, provide more challenging learning experiences for students and make schools more accountable to parents and communities.

The quality of Internet access is critical. Broadband access will be the new standard. Slow, unreliable connections that cannot support interactivity or rich multimedia content will no longer be sufficient.

Toward this end, the cable industry's has developed an initiative called *High-Speed Education Connection.* Under this program, cable companies are deploying broadband technology including **free cable modem and high speed Internet access** to libraries and K through 12 schools. Today, schools and libraries around the country are more effectively utilizing the vast resources available on the Internet because of the cable industry's dedication to this project.

The second challenge is to build on the considerable on air content that *Cable in the Classroom* has provided for so many years to ensure there is the appropriate level of informative, interesting and usable content on-line. Most of the 40 *Cable in*

the Classroom programmer members offer extensive online resources for educational purposes and *Cable in the Classroom* online—CIConline.org—serves as both a clearinghouse for free educational resources offered by the cable industry and as a portal linking teachers to these resources.

A third challenge is ensuring that what our kids see online is safe, proper and positive. The Internet carries with it danger as well as promise. Students, especially young children, need protections from harmful or inappropriate intrusions in their learning environments. The cable industry provides special resources and training to help parents and teachers feel safe and productive in cyberspace. For example, *Cable in the Classroom* recently launched a program called *Take Your Parents to Cyberschool.* With guidance from the National Association of Elementary School Principals, *Cyberschool* uses an interactive online service to show children and parents how to find safe, educational resources on the Internet.

As we tackle the issues of privacy, informative content and access to broadband technologies, gaps persist between technology's presence and its effective use. Simply installing technology in classrooms is not enough. Our teachers and educators must have the capabilities to use technology effectively and incorporate its usage into the daily rhythms of their classes and lesson plans.

To address this issue, we launched in 1998 the *Cable in the Classroom Professional Development Institute,* a series of hands-on computer workshops offered to educators across the country at no cost to schools. These interactive sessions introduce educators to all the vast curriculum resources and services of the cable television industry and help educators make effective use of video and the Internet.

In addition, the cable industry has launched *webTeacher,* a comprehensive, interactive online tutorial available to educators, free of charge. *webTeacher* topics include strategies for navigating the Internet, finding the best web sites for classroom instruction, developing lesson plans, and creating a home page.

Mr. Chairman, in addition to my duties as President of Discovery and Chair of Cable in the Classroom, I serve on the Maryland State Board of Education. I have a personal and deeply held passion for improving educational opportunities for our children. The cable industry shares this goal and is committed to making certain that students of all ages have access to the most advanced technologies and the best and most compelling educational content available.

Attached is a list with examples of cable's commitment to education technology. I look forward to answering any questions you might have.

CABLE TELEVISION'S COMMITMENT TO EDUCATION TECHNOLOGY

I. CABLE IN THE CLASSROOM

Perhaps one of the best-kept secrets in education is the enormous gift that the cable television industry provides every year to elementary and secondary schools throughout the country. Valued at two million dollars per week, more than 100 million dollars per year, Cable in the Classroom is also one of the most comprehensive, well-rounded gifts ever made to education. That gift includes cable communications technology, instructional resources, and professional development. It's a gift that perfectly matches the resources of the cable industry—state-of-the-art connectivity, powerful content, and local, customized delivery—to the needs of schools.

Cable in the Classroom has been honored for its contributions to the education of America's children by:

- The Eisenhower National Clearinghouse for Mathematics and Science Education
- The California State PTA
- The National Middle School Association
- The Educational Press Association of America
- The National Education Association

II. CABLE PROVIDES CONNECTIVITY

Free Cable Connections and Basic Cable Service to K - 12 Schools

One of the foundations of the cable industry's 12-year commitment to education is its donation of free cable connections and basic cable service to K-12, public and private schools through the Cable in the Classroom initiative.

86 percent of American students (over 44 million) in 81,000 public and private schools have access to free cable service and over 500 hours per month of commercial-free, copyright-cleared, educational programming.

Free Broadband Connections—Cable's High-Speed Education Connection

In 1996, the cable industry was just beginning to retrofit its infrastructure to carry the 2-way data required to access the Internet over cable lines. As this tech-

nology was evolving, the industry launched Cable's High-Speed Education Connection, a pledge to provide free cable modems to schools as the new service became available in their communities. Cable modem technology enables schools to access data from the Internet at speeds hundreds of times faster than those available with conventional telephone modems.

In 1998, the cable industry expanded its commitment and began to connect public libraries to high-speed cable Internet service. This initiative allows not only students, but entire communities to benefit from these new technologies, now available in the public arena.

Today, over 5,000 schools and libraries around the country are utilizing the vast resources available on the Internet because of the cable industry's dedication to this project. But these connections are only the beginning.

The following examples of cable's digital connections expand upon the original *High-Speed Education* initiative, demonstrating how partnerships among schools, civic organizations, and cable operators and programmers are benefiting students and communities nationwide.

- **Time Warner—San Antonio, Texas**

For the past seven years, Time Warner systems across the country have been providing free cable service to schools, an investment of more than $3.5 million to date. But now, through *Roadrunner in the Classroom*, Time Warner's schools are being offered free high-speed Internet service, as well. When Time Warner launched *Roadrunner in the Classroom* in San Antonio, Texas, Crockett Elementary School was the first to be able to access the Web at lightning speed. However, all 484 schools in approximately 18 school districts will be given a free cable modem connection, which will service three computer stations in each school's computer lab. Knowing that educators use the Internet to download Cable in the Classroom's free study guides, research topics for lesson plans and contact parents, Time Warner also offered San Antonio's teachers *Roadrunner for Educators*—high-speed premium service at a deeply discounted rate.

- **Adelphia—Academy for the Visual & Performing Arts**

One of Buffalo's oldest schools has become a showcase for the latest technology, including a full-service production studio and editing suite, a LAN computer network and computers, VCRs and television sets in more than 70 classrooms—all of which have both Internet and cable access. Its 800+ students in grades 5-12 will next be linked to students at nine other Buffalo public schools. The school's fiber optic network and state-of-the-art equipment were unveiled by the mayor in May 2000.

- **Cox Communications—Line to Learning**

Digital technology is providing thousands of students with "virtual field trips," thanks to Cox's Line to Learning program. The *Wolves at Our Door* event, for example, in conjunction with Discovery Channel, allowed more than 1,500 middle school students from six schools across the country to visit and interact with wolf experts Jim and Jamie Dutcher and a Sawtooth wolf pack at the Nez Perce Indian reservation outside Boise, Idaho.

More recently, Cox Communications and Bravo Network teamed up to create *Run Away to Cirque du Soleil.* Over 10,000 students across the nation interacted with the performers of Cirque du Soleil in "real time" over the Internet using cable modem technology provided by Cox Communications. This Cox Line to Learning event featured programming produced by award-winning Bravo and explored careers in the arts. Through the Cox high-speed Internet connection, students sent questions to the performers via e-mail, and watched live, two-way-video interactive questioning from students in other parts of the country—from Atlanta, GA, to Lubbock, Texas.

- **AT&T Broadband, Los Angeles, CA—Broadband Stories: Communities in Focus**

As part of a local community initiative, AT&T Broadband sponsors (along with the Challengers Boys & Girls Club of South Central Los Angeles) the Venice Dream Team, a diverse group of youngsters aged 7-13. They cover community, national and international events, getting a unique opportunity to develop creative thinking and photojournalism skills through hands-on, online publishing. Check out the virtual neighborhood for kids of all ages at www.streetseen.net.

In addition, AT&T Broadband sponsored a daylong digital divide summit in March 2000 attended by nearly one hundred local students, teachers, community leaders and legislators. Participants discussed how to break down the cultural, social and technical barriers to Internet access.

• **Boys & Girls Clubs Partnerships**

In wiring their communities, many cable operators partner with local organizations to expand residents' access to computer and Internet access. Boys & Girls Clubs have been especially strong participants. In New England, for example, AT&T (formerly MediaOne) works in concert with 29 Boys & Girls Clubs to provide cable modems, high-speed Internet connections and support service staff and training. As a result, more than 5,000 at-risk, latchkey children have gained access to broadband educational technology and enrichment opportunities.

Similar access is being replicated nationwide, with children as the prime beneficiaries. The Boys & Girls Clubs of the Virginia Peninsula reported one especially rewarding connection provided by Cox Communications. A 13-year-old student received better grades and improved his self-esteem, thanks to his newfound ability to research and write school assignments via Internet-connected computers.

• **Cox Communications—Virginia Beach, VA**

Implementing one of the most advanced distance learning systems in America, Cox has expanded upon a pilot program that provides high-tech videoconferencing capabilities to students in ten area high schools in Virginia Beach, VA. A designated classroom in each school has software and three large-screen televisions, allowing for two-way teaching of mathematics, theater appreciation, public speaking, quality management, advanced placement (AP) statistics and physics courses. Several hundred high school students have already taken classes, and potential future wiring of the area's 15 middle and 55 elementary schools could increase the number of students involved in distance learning to 2,000 per semester. See the Virginia Beach City Public Schools Web site at www.vbcps.k12.va.us.

Home/School Connections

There is ample evidence that active and involved parents have a significant impact on their children's educational success. Yet in today's fast-paced world, it is difficult for busy parents to find time to communicate often with their children's schools, or to keep up with the new computer and Internet skills their children are learning. In disadvantaged communities, there are often big technology gaps between what is available in schools and what students have access to at home.

Innovative cable industry programs are making important electronic connections between home and school. Following are some examples:

• **Time Warner—Akron, Ohio**

In Akron, Ohio, the C-5 Project is breaking down the doors between the living room and the classroom. First- and fifth-graders at Portage Path School use high-speed Internet service, which is provided to their school, free, by Time Warner Cable. With funding from Time Warner and grants from local philanthropists, each student also has a computer and free Internet service at home. Students are able to show their parents and care-givers what they are learning in the classroom, do research and submit classwork. Parents can see their children's work posted on the class Web site and communicate with teachers through e-mail.

• **Comcast—Sarasota, FL**

Comcast Cable Communications in Sarasota worked with the Computer Curriculum Corporation and Brentwood Elementary School in a pilot program providing computers and cable modem Internet service to the homes of 29 fourth-graders. Parents were familiarized with the project and technology in a series of evening classes. Participating students' test scores rose as much as 40 percent and the Sarasota School Board has received grant money in excess of $170,000 as a direct result of the project.

• **AT&T Broadband—Farmer's Branch, Texas**

In Farmer's Branch, Texas, Lt. Governor Rick Perry was on hand when AT&T Broadband and the Texas Education Agency launched a pilot program to study technology's impact on improving education. At Vivian Field Middle School, 100 students have exchanged books, binders and pencils for laptop computers, digital texts, and Internet access—all designed to enhance student achievement by linking students, teachers and parents through donated AT&T@Home high-speed Internet access. AT&T's contribution of more than $50,000 in services and equipment has allowed students to link to their class, teacher and other classrooms around the world for news and information. To further encourage whole-family participation, this middle school offers free computer training for parents so that families can access online test calendars, student projects and digital student portfolios. With AT&T technology, parents in this diverse community can even convert their children's homework assignments to Spanish with a click of the mouse.

• **Cox Communications, Lemon Grove, CA—LemonLINK**

Students, teachers, staff and parents connect in Lemon Grove, CA, thanks to Project LemonLINK, which utilizes Cox's hybrid fiber/coaxial network. One of the country's most recognized interactive home/school projects, it benefits 4,600 elementary and middle school students. LemonLINK has been cited by the Smithsonian Institution, Microsoft Chairman Bill Gates, California Governor Gray Davis and others. See www.lgsdk12.ca.us/lemonlink.

III. CABLE PROVIDES CONTENT

Free Access to Commercial-Free Educational Television Programming

When cable companies pledged free connectivity in 1989, the cable program networks pledged to provide educational programming. Today, more than 540 hours per month of quality, commercial-free, educational programming is provided to teachers free of charge by more than 40 cable networks.

From the beginning, Cable in the Classroom and its members have listened to what classroom teachers, school media specialists and national education organizations say about the kinds of media resources that are most useful in the classroom. Consequently, there are no strings attached to using Cable in the Classroom resources. Teachers may use as much or as little of a given program as they choose to fit their state and local academic needs. Some teachers use segments from Cable in the Classroom programs every day; others may use them only a few times each month.

In addition, all Cable in the Classroom programs share four characteristics. Educators can count on programs that:

- are free of commercial advertising;
- are available free to educators;
- provide quality educational content;
- have extended copyright clearances of at least one year.

These programs cover a wide range of curriculum areas, including science, language arts, social studies and history, mathematics and the arts. Additional programming addresses social issues like diversity, drug abuse, violence and Internet ethics. Each month, there is something for each grade level, from pre-kindergarten through high school. Cable networks such as A&E, CNN, C-SPAN, Discovery, The History Channel, Nickelodeon and The Weather Channel air special, commercial-free programs for schools usually in the early morning hours, with the idea that teachers can record the programs, build a school or classroom library, and use the programs at appropriate times during the year. Since Cable in the Classroom began, the cable television industry has provided more than 60,000 hours of educational programming to schools.

Programming ranges from early childhood programs such as Allegra's Window, Blue's Clues, and Sesame Street from Nickelodeon and Noggin, to the high school level, with programs such as C-SPAN's series on the American Presidents, ESPN's SportsFigures, The History Channel's Underground Railroad series, CNN's Newsroom, and Discovery's science and history series. Other programs include Court TV's Choices and Consequences series, and The Weather Channel's lessons on weather and weather-related careers.

Cable's commitment to providing schools with the highest quality educational tools translates to dynamic learning experiences in classroom across America. Following are examples of cable programming available to schools for their use:

• **CNN Student Bureau (CNNSB)**

More than 400 schools are enrolled in Turner Learning's CNN Student Bureau, which offers high school and college students worldwide the opportunity to have their written and video work published on its Web site or on *CNN Newsroom,* CNN's daily classroom program, or on the broader CNN networks. CNNSB can enhance journalism, broadcast or mass communications programs, and be integrated into English or social studies departments, inter-disciplinary programs or clubs. Free print and multimedia curriculum materials help guide students through the process of creating news coverage from their perspectives. See www.turnerlearning.com or call 800/344-6219.

• **Discovery—2001: A Discovery Space Journey**

Discovery's *Inside the Space Station* premiered around the world (149 countries, 27 languages) on December 10, 2000, and kicked off a yearlong initiative, *2001: A Discovery Space Journey.* Complementary online content includes streaming video feeds of news events, live chats, interviews with space experts plus a full-screen 3D simulation that allows viewers to "float" and maneuver through the space station

with the click of a mouse. The series focuses on developments in exploring the final frontier, with expanded broadband and interactive content available at www.discovery.com.

• **Ovation—The Arts Network—The Rhythm of Life**

Music represents one of the biggest growth areas on the Internet. Ovation not only offers students the opportunity to download music, but also the ability to compose their own short pieces. It is all part of *The Rhythm of Life,* a three-part program exploring the building blocks of music: rhythm, melody and harmony. Legendary Beatles producer Sir George Martin offers advice along with a little help from his friends Billy Joel, Stevie Wonder, Celine Dion, Paul McCartney and many others. Ovation offers additional interactive components to dozens of its ArtsZone programs. See www.ovationtv.com/artszone/programs.

• **Pennsylvania Cable Network**

Created in 1979 as America's first educational cable television network, the nonprofit Pennsylvania Cable Network (PCN) utilizes the power of cable to promote social and economic progress. Its regular programming includes *TV 411, za literacy training program, and Essential Workplace Skills. Homework Help,* a live interactive weekly series, airs throughout the school year. Designed to help students with their homework assignments, the 2-hour call-in program features state-certified teachers answering math and science homework questions from elementary, middle and high school students. See www.pcntv.com.

• **Time Warner Cable—Crete, NE**

To help make kindergarten children feel more comfortable with their first school experience, teachers at the Crete Elementary School in Crete, NE, designed a project called "Franklin's Friends." Students watched episodes of the Nickelodeon series, *Franklin* and chose one of Franklin's friends to be their play "buddy." They also visited the Nick Jr. Web site and read *Franklin* books on loan from their school library.

• **Time Warner Cable—Kansas City, MO**

A hometown hero came to life for a class of seventh graders at St. Paul's Episcopal Day school in Kansas City, MO. For their "We're Just Wild About Harry" project, students began with an A&E Biography of President Harry Truman. Next they chose artifacts from "The Truman Trunk" on the C-SPAN Web site for further research, and later assumed the characters of significant players from that time and wrote and delivered speeches about national and world events. A visit by the C-SPAN school bus capped the initiative.

• **Time Warner Cable—Milwaukee, WI**

The final frontier stretched to new lengths in "To Infinity and Beyond," a project by second graders at Tippecanoe School for the Humanities in Milwaukee, WI. After seeing a portable planetarium at their school, they created their own version by turning their coatrooms into a walk-through experience depicting the solar system. The students became museum docents, leading tours and imparting their knowledge to guests. Watching The Learning Channel program, *Destination Mars,* led to further projects that included artwork, fiction and non-fiction pieces, music and dance.

• **Time Warner Cable—Raleigh, NC**

More than two centuries after the stirring events preceding the Revolutionary War, the historical period came alive for students at Fred J. Carnage Middle School in Raleigh, NC. The History Channel's *The American Revolution* became the foundation of a project that sparked student essays on particular incidents that led up to the revolution. Students reenacted the trial of the British soldiers accused of murder in the Boston Massacre, with a local attorney instructing them on the application of legal principles, rules of evidence and courtroom procedures of the time.

Election-Year Programming

In 2000, cable offered a variety of programs for students of all ages that not only covered the presidential campaign, but also the electoral process. With this and other current events coverage, youngsters are being given the opportunity to become the best-informed, most active generation of citizens and voters.

• **BET—Your Voice/Your Vote**

A series of special programs airing throughout the Democratic National Convention and featuring guests from the worlds of government and entertainment, *Your Voice / Your Vote* targeted African American youth in order to increase their awareness of the importance of their vote.

- **CNN—Your Choice Your Voice**

Leading up to the election, CNN launched a six-part Internet-based program for junior and senior high school students that ended on Election Day. Students answered quizzes each week and held mock online elections in their classrooms. In conjunction with local cable operators, 100 schools around the country were selected to participate and were eligible to win an A/V equipment package and a CNN Newsroom on the Road town hall meeting. See www.cnn.com.

- **C-SPAN—Road to the White House**

In conjunction with *Road to the White House,* television's most in-depth coverage of the presidential race, C-SPAN offered extensive online resources that included three classroom-teaching modules on national party conventions, presidential debates and Election Day. Its Web site features additional classroom materials on elections and politics, including the Life Portraits display of original oil portraits and biographical sketches of every American president. See www.c-span.org/classroom.

- **MTV—Choose or Lose**

For the third consecutive presidential election cycle, MTV expanded its comprehensive *Choose or Lose* campaign. *Choose or Lose 2000* included its most in-depth online component ever, complementing its coverage of the political process and including a voter registration drive in conjunction with "Youth Vote 2000," the largest non-partisan coalition of national organizations committed to encouraging civic participation. In September 2000, a Street Team hit the road on *Choose or Lose 2000: Road Map,* offering a crash course in voting and promoting a better understanding of public policy issues among young people. See www.chooseorlose.com.

- **Nickelodeon—Kids Pick the President**

Throughout the election year, Nickelodeon gave kids a platform to voice their opinions, interests and concerns. Kids Pick the President culminated with a *Nick News Special Edition* in October that included coverage from the kid reporters who were on the campaign trail, polls and more. Lesson plans accompanied this and all previous *Nick News* episodes. See www.teachers.nick.com.

- **Time Warner Cable—Staten Island, NY**

Starting with the two famous funeral orations of Julius Caesar, 10th grade language arts students at New Dorp High School in Staten Island, NY, created the Caesar Election Project. They launched a hypothetical election campaign with catchy slogans by using contemporary tools such as posters, buttons, television and radio spots. Turner Learning's *By the Book—Stage to Screen* guide provided lesson plans to accompany their viewing of the film version of Julius Caesar. Not only did students gain a fresh appreciation for the writing of William Shakespeare, but they also became more informed citizens by learning about today's electoral process.

Print Resources for Educators

While use of the Internet is definitely impacting the way children learn and the way teachers teach, that sea change has not yet reached every school or classroom. In the National Center for Education Statistics 2000 study, teachers were asked about their use of computers and the Internet. Thirty-nine percent use the Internet to create instructional materials and 17 percent use it to gather information for planning lessons. To be sure to reach those educators who are not yet comfortable on the Web or do not have Internet access, Cable in the Classroom networks provide extensive print materials to help educators meet their curricular goals:

- BET provides an Educator's Toolkit to accompany its on-air biography series, *Journey's in Black.* Through the kit's unique activity templates of a game show, dream journals and timelines, students get practice in valuable life skills such as resume writing, problem solving, goal setting, interviewing techniques and communication skills.
- The History Channel collaborated with the National Museum of American History to produce a 28-page guide to accompany the exhibit *The American Presidency: A Glorious Burden.*
- Teachers who integrate A&E Networks programming into their curricula can receive recognition through its semi-annual *Idea Book for Educators.* Updated and mailed every July and December, the publication not only disseminates advance information about *A&E Classroom* programs and innovative plans to teachers nationwide, but also awards $500 to each teacher whose unique lesson plan is included in the ensuing edition.

Free Educational Resources on the Internet

Besides free educational television programming, since the late 1990's, the cable television industry has provided elementary and secondary students, teachers and parents with vast educational resources on the Internet. Many of those resources directly complement cable networks' commercial-free educational programming. Other resources link learners and teachers to an array of tools that support academic success. Typically, the resources include lesson plans, classroom hand-outs, assessment ideas, safe and pre-screened hotlinks to related resources, and more. Increasingly, the resources are correlated to the appropriate academic standards that are so important to teachers today.

Online Materials to Help Teachers Use Educational Television Effectively

Several cable program networks provide teachers with complete lesson plans that support the educational videos they air.

- Court TV's lesson plans (www.courttv.com/choices) for its *Choices and Consequences* series help teachers use actual court cases involving youth to help students understand the consequences of risky or violent behavior. The lesson guides provide teachers with background on the video, suggestions for classroom activities, vocabulary words used in the video that might be unfamiliar to students, and suggestions for how student learning might be assessed.
- Nickelodeon provides a similar service for some of the educational series it broadcasts. For *3-2-1 Contact,* for example, the teacher can download lesson plans (teachers.nick.com) that link each program directly to the National Science Education Standards and, where appropriate, to National Geography Standards. Those lesson plans include suggestions for classroom activities, lists of materials needed to conduct classroom experiments, suggestions for assessing student learning, and links to other Web sites for additional information on the topic.
- ESPN provides interactive exercises (sportsfigures.espn.go.com) that are directly related to the science and mathematics concepts taught in SportsFigures.
- USA Network turned its coverage of the grueling Eco-Challenge race in Borneo into important lessons about cooperation, teamwork and problem solving—skills essential for success in school and beyond. See usanetwork.com/cablein classroom/eco.

Other Online Resources

Some cable program networks and cable operators also provide more general support for learning. For example, Discovery offers students *B.J. Pinchbeck's Homework Help* (school.discovery.com/students) which they can consult from home for help with tough assignments. AT&T Broadband, through the AT&T Learning Network (www.att.com/ learningnetwork), provides teachers with help in locating distance education courses they can take to keep their credentials current. Comcast's Online Schoolyard (www.onlineschoolyard.com) provides learners with a variety of resources, including links to other Web sites where they can find information directly related to the subjects they are studying in school.

Cable in the Classroom Online

CIConline.org links the cable industry to the education community. It serves both as a clearinghouse of educational resources offered by the cable industry and as a portal through which educators can find and link to a wide variety of educational materials. Highlights of CIConline include:

- **Search the Listings** (www.ciconline.org/cicsearch/searchpage.cics)—This flexible feature allows users to search two months of program listings by keyword and several other criteria. Once programs are identified, most have links to support materials and to the network sites, where other educational materials can be found. This feature makes it simple for an educator to quickly identify what cable programming will fit the upcoming curriculum and get new ideas on how to use it.
- **Connecting to Standards** (www.ciconline.org/section.cfm/4/34)—This section features a seven-part series of articles exploring the ways in which teachers meet their local or state standards using cable programming and Internet resources. Many cable networks have aligned their educational materials with the standards; links to these and other standards-oriented resources are also found here.
- **Programming and Resources** (www.ciconline.org/section.cfm/4)—This section contains myriad materials for teachers, including descriptions of and links to free support materials created by cable networks and a form to sign up for custom e-mail alerts containing information on specified areas of interest.

- **Professional Development Institute** (www.ciconline.org/section.cfm/6)—Cable in the Classroom's Professional Development Institute has created many tools to help teachers and parents become more Internet-savvy. In this section, users may locate free Internet training classes in their areas and find a list of family-friendly, educational Web sites that help make the Internet more useful.
- **Family Zone** (www.ciconline.org/section.cfm/7)—The Family Zone gives parents and teachers a chance to take charge of the TV and learn media literacy skills to share with their children and students. There are also ideas on how parents can volunteer for their schools simply by setting a VCR at home to tape Cable in the Classroom programs and donating video tapes to schools.

Cable in the Classroom Magazine

Eleven times a year since February 1991, educators across the U.S. have received *Cable in the Classroom* magazine to help them find and use the commercial-free, educational resources of the cable industry to improve learning. Approximately 120,000 preK-12 teachers, library media specialists, principals, administrators, and technology coordinators receive the magazine each month, and an estimated 310,000 additional educators read it in their schools. Ninety percent of those copies are donated to schools by local cable companies. Ninety-six percent of the educators who receive *Cable in the Classroom* magazine read it regularly, and 72 percent pass it on to a colleague. 1This award-winning publication features articles by and about educators who creatively integrate video and computer technologies with books and other resources to offer students a richer, more engaging learning experience. It also contains:

- comprehensive information about more than 500 hours of commercial-free, educational programming provided through Cable in the Classroom, Web sites and free study guides available to educators in support of these programs, and the extended copyright clearances cable programmers provide, so educators can tape and save these programs;
- Educator-written reviews of programs, demonstrating how the programming meets state and local academic standards;
- information about cable-sponsored contests, grants, and awards that recognize excellence in teaching and provide funding and technology to achieve teaching goals;
- information about dozens of free online, video, and other resources useful for teaching such major themes as Black History Month, Women's History Month, Authors and Literature, National Hispanic Heritage Month, Space Day, and many more;
- free, reproducible lesson plans, maps, and study guides created by educators and inserted into the magazine by cable networks.

Educators value the information in *Cable in the Classroom* magazine so much that more than 4 out of 5 readers take action as a result of reading it, whether passing information on to a colleague, taping a program, visiting a Web site, or requesting the free materials.

No matter where their creativity and cable's resources may take them, these educators start with *Cable in the Classroom* magazine. From preschool to high school; from Art to Zoology; from Language Arts, History, and Geography to Current Events, Space Science, and Math; *Cable in the Classroom* magazine shows educators how their peers integrate a variety of 21st century resources to meet high standards and engage their students, and guides them to the resources that will enable them to do the same.

IV. CABLE'S INTERNET SAFETY, ETHICS AND MEDIA LITERACY INITIATIVES

Television, the Internet and other types of media can be enriching educational resources when used wisely. They can also be the cause of concern, when used without care or supervision.

Cable in the Classroom and the cable industry are helping teachers and families manage the vast array of media messages that are so much a part of modern life. By learning how to understand, analyze and evaluate television, the Internet and other media, teachers, students and families can become "media literate."

Take Your Parents to Cyberschool—**A partnership of Cable in the Classroom and the National Association of Elementary School Principals**

Many parents are concerned that the Internet is a huge, chaotic world, and their children will be lost in cyberspace. That's why Cable in the Classroom, with guidance from the National Association of Elementary School Principals (NAESP), created *Take Your Parents to Cyberschool. Cyberschool* uses an interactive, online game

to show children and parents how to find safe, educational resources on the Internet. The site also features information about media literacy and Internet safety.

In February 2001, *Take Your Parents to Cyberschool* was launched to inform parents and other adults about the valuable educational resources available online, for use at home or school. The Web site www.cyberschool.ciconline.org was created to encourage students and parents to sit down together and tour an assortment of educational sites while playing a fun, interactive, educational game. After the game experience, adults are invited to continue surfing the site to learn more about Internet literacy and Internet safety.

NAESP played an important role in creating the site and informing educators about this effort. During the first week, principals were asked to open their school computer labs and show parents how technology is used to support instruction. Local cable companies hosted community events and thousands of schools across the country participated. In addition, numerous partners, including McGraw-Hill Education, Microsoft Encarta and Motorola Broadband Communications Sector, donated educational prizes for visitors to the site. The site received more than 770,000 hits during the first four days.

- In Chicago, IL, AT&T Broadband hosted a weeklong, traveling series of cybertours for students, parents and teachers. These participants learned about Internet safety and productive use of the Web for school assignments.
- The AT&T Portland, OR, *Cyberschool* sessions took place in Boys and Girls Clubs, reaching out to segments of the population that may have less access to technology.
- At all 22 branches of the Columbus, Ohio Metropolitan Libraries, Time Warner worked with computer teachers to encourage students to visit the Cyberschool site as a homework assignment and set up table-top displays offering brochures on Internet literacy.
- To salute National African American Parent Involvement Day, the Time Warner system in Minneapolis, MN, hosted a series of parent/student open-house *Cyberschool* tours.
- Throughout California in March 2001, the California State PTA is partnering with Cable in the Classroom to encourage parents to learn how to safely use the Internet to support children's learning. The CA State PTA's home page hotlinks to the *Cyberschool* site, where children and parents together can access educational resources from Cable in the Classroom's 40 cable networks. The California Cable and Telecommunications Association donated educational premiums for participants and cable companies and PTA members are hosting local events.

Other Media Literacy Tools for Teachers and Parents

- Two years ago, High-Speed Access Corporation, a leading provider of broadband Internet service, Cable in the Classroom and several other partners created *Web Smart Kids zto help parents teach their children how to safely find and evaluate information on the Internet. The Web Smart Kids* Web site (www.web smartkids.org) is a guide to building children's media literacy skills for the online world.
- This year, Cable in the Classroom is piloting a workshop to help parents and children learn how to be "Cyber Savvy" Internet users. Workshop participants explore computer ethics, Internet safety and privacy issues, and determine fair and appropriate guidelines for use of the Internet and e-mail.

V. CABLE PROVIDES PROFESSIONAL DEVELOPMENT

Cable in the Classroom Professional Development Institute

The Cable in the Classroom Professional Development Institute was started in 1998 to introduce educators to the vast educational resources and services of the cable television industry and to help educators and parents make effective educational uses of video and Internet resources. The Institute provides hands-on training through computer labs that travel across the country, centers in the Washington DC area, mobile laptop labs, and virtual workshops. The Institute is staffed by professional educators who also have extensive experience in information and communications technologies. All of the Institute's activities are supported by the cable industry and are made available to school districts free of charge through local cable companies. The workshops carry Continuing Education Unit (CEU) credit for teachers.

Cable in the Classroom has been invited to present Internet workshops at a multitude of national and state education conventions, including:

—National School Boards Association Technology + Learning

—National Association of Elementary School Principals
—National Council for the Social Studies
—National Middle School Association
—California State PTA

• **Washington, DC, Area Teacher Training Labs**

On behalf of the two cable providers in the Washington, DC, area, Comcast and Cox Communications, Cable in the Classroom has partnered with the DC Public Schools, the Smithsonian Institution, George Mason University, Arlington Public Schools, Montgomery County Public Schools, and Fairfax Public Schools to create computer training labs. In those facilities, teachers learn to become more proficient users of teaching technologies, integrating multimedia resources into their classes. The workshops last from two to six hours and are tailored to the needs of the participants in each class.

In Washington, DC, Cable in the Classroom was selected to host workshops for the winners of the Presidential Awards for Excellence in Teaching Mathematics and Science Teaching. These hands-on computer workshops were held at Cable in the Classroom's lab at the Smithsonian Museum of Natural History, where the outstanding educators were introduced to an array of curriculum materials provided by the cable industry.

• **Mobile Teacher Training Labs**

Through a generous grant from AT&T Broadband, Cable in the Classroom has three mobile laptop labs that are stationed in regions for approximately a year at a time. In 2001, the units are in Chicago, Portland-Seattle, and St. Louis. Staffed by a professional educator, the labs travel from school district to school district offering free hands-on computer workshops. In addition, the Institute has three other laptop labs that are shipped throughout the country at the request of local cable systems—all at no cost to schools.

In the year 2000, the Professional Development Institute and its partner institutions offered more than 2,100 hands-on workshops at 645 locations in 34 states, training more than 42,000 participants.

Additional Professional Development Opportunities

• **Time Warner—Houston, Texas**

In Houston, Texas, Time Warner provides cable service and *Cable in the Classroom* magazine to 825 schools in 34 school districts, a donation valued at more than $30,000 per month. But Time Warner realizes that training teachers to use educational technology is also vital. In September 2000, Time Warner gathered librarians from 62 schools—matching cable's free educational technology to Texas state standards. During another teacher training session at Wesley Elementary, State Representative Sylvester Turner praised Time Warner for its involvement in education.

• **Cablevision —Educator Institute 2000**

Teachers throughout the New York City metropolitan area receive free, professional development through Cablevision's Educator Institute 2000. Experts guide participants in creating lessons that make the most of Internet resources, and then facilitate a peer-review process to refine these lessons. All educators in the local franchise areas, from administrators to classroom teachers, with any level of technical expertise, are encouraged to apply. In Fall 2000, two-day institutes were held in New York City, New Jersey, Long Island and Westchester County.

webTeacher

The Internet holds tremendous potential as a teaching tool. It can provide a rich source of reference materials and experiences, transport teachers and students to distant worlds, and enhance a wide range of subjects and curricula.

But without adequate training, many teachers cannot take advantage of all that the Internet has to offer. While Cable in the Classroom's Professional Development Institute provides Internet training to thousands of teachers each year, it cannot be everywhere and reach everyone. Recognizing the need for on-demand teacher training, the cable television industry and TECH CORPS, a non-profit organization of technology volunteers, developed webTeacher.

webTeacher is a comprehensive, interactive, 80-hour, self-guided tutorial available to educators, free of charge, over the Internet. Flexible training modules, in both English and Spanish, help teachers master the Internet and integrate new technologies into student learning. Accessible 24 hours a day, webTeacher can be an educator's private tutor or serve as the basis for group instruction. Topics include

how to navigate the Internet, find the best educational Web sites, develop lesson plans, create a home page and receive valuable tips on Internet safety.

webTeacher is frequently used in free teacher workshops given by Cable in the Classroom, cable state associations and TECH CORPS. Parents and children can also log on to this Web-based tutorial at home to learn about the Internet at their own pace and on their own schedule.

webTeacher represents an investment of over $500,000 by the cable communications industry. Supporters include State Departments of Education, State Computer Using Educators Associations.

See www.webteacher.org and www.webteacher.org/Espanol.

Professional Development Videos

With cable's commitment to education comes responsibility for helping teachers learn how to use technology for the strongest possible educational impact in the classroom. Over the years, Cable in the Classroom has produced a number of videos that feature educators who model effective use of educational television and online resources.

Most recently, Cable in the Classroom partnered with the Association for Supervision and Curriculum Development to produce *Connected Teaching: Helping Students Make Positive Choices.* This 23-minute video features four educators in urban settings who have discovered how effective use of the cable industry's educational resources—online and on video—can help their students succeed. Developed in collaboration with the White House Office of National Drug Control Policy (ONDCP), *Connected Teaching* demonstrates the powerful ways educational media can engage students in core curriculum topics, alert them to the negative consequences of drug use, and encourage their involvement in pro-social activities.

To date, thousands of free copies of Connected Teaching and its companion resource guide have been distributed to K-12 educators and colleges of education. The video has aired hundreds of times on national cable networks as well as on local cable stations. Local cable operators often use the video as the centerpiece of workshops provided to educators.

VI. CABLE'S EDUCATIONAL OUTREACH TO COMMUNITIES AND FAMILIES

• Cable in the Classroom Comes Home

Cable in the Classroom Comes Home is an initiative designed to involve parents and other volunteers in helping teachers bring cable's high-quality free resources to the classroom. Teacher surveys indicate that educators often do not have enough time or in-school equipment to tape as many Cable in the Classroom programs as they would like. The research also clearly shows that educators and schools need these resources to supplement the materials they are able to buy with limited budgets.

As *Cable in the Classroom Comes Home* volunteers, parents and other community members who might not have time to offer help to schools during the work day, can tape teacher-requested Cable in the Classroom programs at home and donate the videos to their schools.

Via the *Comes Home* effort, thousands of schools have built no-cost, commercial-free, educational video libraries over the last three years. Educators have more resources to enrich their lesson plans and families have less traditional, less time-sensitive opportunities to connect with their local schools.

Advisors to this effort include the National Association of Elementary School Principals, the National Association of Secondary School Principals, the National Middle School Association, the American Association of School Administrators and the Association of Educational Communication and Technology's Division of School Media and Technology. *Family Circle* magazine carried information about the effort and the Food Marketing Institute (representing over 20,000 supermarket chains) distributed free brochures to their members to pass out to customers at supermarket check-out lines.

- The Retired Teachers Division of the American Association of Retired Persons (AARP) actively participated in this effort and asked their members to both tape requested programs and mentor junior educators by previewing programs and suggesting appropriate curriculum links. Many human resource associations and for-profit companies promoted this effort to their employees as a good opportunity for workers to help schools in a meaningful way while still working traditional work hours.
- According to the Maryland State Department of Education, *Cable in the Classroom Comes Home* is the cornerstone of a major campaign for parent and family involvement in schools. This statewide partnership launched with a day-long

training for educators from Maryland's nationally recognized Blue Ribbon Schools and included meetings with the state superintendent and local PTAs at the MD PTA conference.

Other Community-Based Activities

- **The History Channel Time Machine**

A year-long traveling educational exhibit invites students of all ages to explore major events and people in our nation's history. This interactive experience is sponsored by cable systems such as Adelphia and Charter Communications and will tour schools and public venues in more that 50 cities by September 2001. In February 2001, the parents and children of Miami, Orlando and Birmingham, AL will see what it's like to smell imported British tea in Colonial Boston Harbor and "drive" in rush hour traffic in Manhattan—all inside this cable-sponsored, 48-foot long trailer. In Spring 2001, the *History Time Machine* will move on to other cities like Los Angeles, Milwaukee and Detroit.

- **The C-SPAN School Bus**

The C-SPAN School Bus is a 45-foot, bright yellow "Custom Coach," specially outfitted with video monitors, computers and television equipment. Half of the bus serves as a mobile classroom, while the other half functions as a working production studio. C-SPAN buses have traveled to 1,800 local communities, all 9 presidential libraries and all 50 states and state capitals, encouraging teachers and students to learn about our political system and take part in government, as well as celebrate American literature.

C-Span Bus stops for March 2001 include:

- Natchez, MS (Cable One)
- Nashville/Springfield, TN (Intermedia)
- Cincinnati, OH (Time Warner)
- Columbus, OH (Time Warner)
- Boston/Plymouth, MA (Adelphia)
- Philadelphia, PA (Comcast)
- New Rochelle, NY (Cablevision)
- Comcast, Philadelphia, PA—Police Athletic League

In the city of Philadelphia, PA, Comcast provides eleven Police Athletic League centers with Internet service and computers, affecting as many as 350 children each day. At the same time, Comcast is identifying opportunities for employees to mentor and train youngsters at the centers on computer skills and Internet applications, helping ensure the youngsters have the technological skills essential for future employment.

- **Time Warner Cable—Syracuse, NY**

Elementary school students and senior citizens have a special connection in Syracuse, NY. First grade students were matched with senior citizens in homes, community centers and nursing facilities. Thanks to high-speed cable modem connections, they became e-mail pen pals. Teachers took online training courses and helped their students develop topics for discussion with their senior "keypals." Not only were young and old lives enriched, but students also improved their reading and writing skills.

- **WISH TV**

In Fall 2000, more than 1,500 fourth grade students in schools in Connecticut, Illinois, Louisiana and Ohio received free in-home access to the Internet through their television sets. WorldGate Communications' yearlong pilot program, which does not require a computer, but instead utilizes a digital set-top box to access the Internet, will bridge the digital divide for students in Belle Rose, LA; Madison, IL; Newtown, CT; and Massillon and Toledo, OH. Local cable operators providing cable access include Charter Communications, Buckeye Cablevision and Massillon Cable TV Inc.

VII. CABLE RECOGNIZES TEACHER EXCELLENCE

Many educators achieve remarkable results, often without the resources they need and the recognition they deserve. The cable industry is making a difference, not only by providing content and technology, but also by recognizing the innovative teachers who make such a difference in children's lives. Turning the spotlight on these educational role models stimulates others to excel. But the ultimate beneficiaries are the students, who are challenged and encouraged by these award-winning teachers and the resources that come with the awards. Students also win when the cable in-

dustry recognizes their achievements through local and national contests and scholarships.

- **Time Warner** *National Teacher Awards*

Over the past twelve years, Time Warner Cable's National Teacher Awards have been awarded to hundreds of outstanding educators. At the local and national levels, thousands of teachers submit projects using cable's programming and Internet resources in innovative classroom activities. Later this year, twenty national winners will receive a Crystal Apple statue, a $1,000 grant and an all-expenses-paid trip to Washington, DC.

- **AT&T Broadband's** *.edu Technology Grant Program*

This pilot program in the greater Chicago area, designed to support the effective use of technology both in the classroom and at home, awards grants of up to $5,000 to educators. Its objective is to display the educational value of technology and help teachers, students, families and community members access the technology tools and support needed to develop and nurture life-long learners.

- **AT&T Broadband's** *Emerging Technology Awards for Educators*

Forty-eight teams of K-12 educators in AT&T Broadband service areas who develop a curriculum unit that integrates Cable in the Classroom programming, or the Internet to address local or state standards are eligible to win cash prizes and digital cameras for classroom use. Visit www.att.com/learningnetwork.

Mr. UPTON. Thank you.

Mr. Krisbergh, welcome.

STATEMENT OF HAL KRISBERGH

Mr. KRISBERGH. Good morning, Mr. Chairman, members of the committee. Thank you for inviting me to go over our program here of WorldGate.

WorldGate picks up a little bit where Ms. McHale left off focusing on the school initiative. We are focused on bringing the Internet into the home using the broadband infrastructure.

WorldGate is a for-profit company, private for-profit company. We have three major focuses at WorldGate. One, using the broadband infrastructure to provide general deployment of very low-cost, high-performance Internet access to the home; two, an all-city initiative providing Internet access to every home within that community; and, finally, and specifically, an education initiative I know of special interest here at the committee. We call it the WISH TV program that Chairman Tauzin and Ed Markey talked about and have been involved with, and we actually had a major launch of that program here last summer.

Let me get at some of the specifics. The WorldGate service does not require a PC in the home or a laptop, in order to break and close the digital divide, the key is to eliminate the cost of equipment.

One of the nice things about the WorldGate service is it uses existing set-top converters that are deployed for other reasons, namely, video services. For example, the Internet itself grew as quickly as it did, we know, because of the use of PCs for desktop computing and the Internet could grow quickly because that platform was there. There are over 55 million set-top boxes already deployed in the United States. Cable passes open 98 percent of U.S. households, and that kind of pervasive deployment makes access to the Internet in the home very, very easy.

The service is not low-performance, we get ten times the speed of a typical telephone connection. The cost of the service is under $10 a month. Currently, WorldGate is being deployed across the

country—in fact, Congressman Markey's comment—also around the world. We have just made a big announcement yesterday of a whole Latin American initiative to deploy WorldGate through Central America, Latin America, and Mexico.

WISH TV is an initiative that we have begun, as I said, last summer. Its purpose is to provide and ensure that every student entering high school has had at least 1 year of Internet access in the home for free. We all know that sending a student to a local library or to a community center late at night in the city, or even five miles away in a rural area, is difficult. The idea is to bring it into the home, and we launched a program providing access in the home with participation from the two big suppliers of equipment, Motorola and Scientific-Atlanta, as well as major cable operators like Charter, Massillon, Buckeye and Cox.

The program is also supported by Louisiana State University, Nicholls State who developed the content of the program. It is to enable the parents as well as the students to communicate back and forth with the school system. We are now up and running in schools across the country in about 10 States, involving about 15 different schools in both rural and urban areas.

The program is being expanded next year, and the key issue here is the support of the cable industry in terms of utilizing their existing pipes. This does not require any government funding or subsidization. It fundamentally uses the existing infrastructure in a way that is very low-cost again, for the operator. It encourages the deployment of the service, and basically provides what we think is a very, very interesting educational initiative across the country.

The third program is our all-city initiative. LaGrange, Georgia has gotten a lot of attention recently as the city has provided free Internet access to all of its citizens. The initiative was initiated last year. It has been very successful. It is getting a lot of publicity in terms of allowing every single home to have unlimited free Internet access, a very ambitious program, and LaGrange has received the High Tech city of the Year Award for that, and we are very pleased with that program.

But, again, in summary, as the ability to use the Internet, what WorldGate provides is an infrastructure and the technology, and specifically the cable industry infrastructure, a very low-cost, high-performance Internet access both for an educational initiative or for providing broad Internet access within a community, and certainly with the major objective of closing the digital divide. Thank you.

[The prepared statement of Hal Krisbergh follows:]

PREPARED STATEMENT OF HAL KRISBERGH, CHAIRMAN AND COE, WORLDGATE COMMUNICATIONS

The WISH TV project provides a practical working solution to the digital divide by connecting the classrooms and homes of elementary school students and their parents to the Internet using the cable television infrastructure. WISH TV currently gives students, parents and teachers *free* Web access and email using WorldGate Communication's technology. Users have access to the Web and e-mail using their television sets and a standard cable set-top converter rather than a personal computer and telephone line. WorldGate's Ultra-Thin Client SM architecture places the computing power at the cable headend rather than in the set-top. Since data is processed at the headend (the set-top doesn't require significant amounts of CPU or

memory (which makes the set-top less expensive and, set-top obsolescence is minimized because technology upgrades occur at the headend.

Over the past few years, the government has spent millions of dollars on programs designed to close the digital divide and as yet none of the programs has provided a practical working solution. WorldGate's WISH TV has the potential to *cost-effectively* connect millions of Americans to the Internet by using the cable TV infrastructure and tapping into the television set, the most ubiquitous platform in the home. Since cable television passes 97% of all American households (and virtually everyone has a television (WISH TV offers a low-cost practical working solution to the digital divide.

In January 2001, the WISH TV project launched to elementary schools in Illinois, Louisiana and Ohio. Students and their families are receiving the service at no charge for one academic year. The initiative has two basic goals:

1. Increase student achievement through collaboration with students, parents and teachers and thus empower students to take an active role in their own learning experiences.
2. Bridge the digital divide for many functionally literate parents by encouraging them to learn how to simply and easily access the Web and email using their television, and a cable set-top so they can be involved in their children's education (able to review home work assignments and communicate with teachers by email) and be connected themselves to power of the Internet.

Although the program has only been in place for two months, Louisiana State University researchers at Belle Rose Primary in Louisiana have been studying the effects of WISH TV on students, their parents, and their teachers. Parents, teachers and even the students themselves have noted changes in student behavior, attitudes, and motivation to learn.

To make this program possible, WorldGate spearheaded a cross-sector effort including leading cable set-top box manufacturers Motorola and Scientific-Atlanta, cable operator partners Charter Communications, Massillon Cable and Buckeye CableSystem, Louisiana State University, Nicholls State and the elementary schools (Belle Rose Primary, in Belle Rose, LA, Madison Middle School in Madison, IL, Beech Grove, Newman, and Moffitt Heights Elementary Schools in Massillon, OH; and Arlington and Raymer Elementary Schools in Toledo, OH) served by those operators. The pilot project is expected to expand rapidly in the 2001-2002 school year.

Mr. UPTON. Thank you. That was a terrific story, we are all most impressed.

Ms. Grad.

STATEMENT OF RAE GRAD

Ms. GRAD. Thank you, Mr. Chairman, and thank you, subcommittee members, for inviting PowerUP to present information to you. We are the baby of the group here. We have been in existence for a year. My name is Rae Grad, I am the CEO, and even though we are the baby, we like to think that we are on the move and coming to your neighborhood any day now.

Those of you who have noticed our little logo, PowerUP, see the "U-P" is capitalized. You might wonder why.

Mr. UPTON. Upper Peninsula, we knew that that was——

Ms. GRAD. That would be wrong.

Mr. UPTON. It is not "Freddy Boy Upton" either.

Ms. GRAD. It stands for "Unleashing Potential" in youth, and that is what we do, and we very purposefully have that "U-P" in our title because we think what we are doing with Internet connectivity and giving children and youth a chance to be connected to the 21st Digital Century is quite remarkable.

What makes us different? Well, one of the things is that we are very comprehensive in what we do. It is always good to see model programs out there doing wonderful things, but we do get concerned when approaches are fragmented—if there is a big push on wiring but no hardware, if there is a big push on hardware but

there is no wiring, if there is a big push on content, but no hardware and software. So we said, well, let's do the whole thing.

So we have a comprehensive solution which includes hardware, software, connectivity, training of staff, content—so we have a portal called PowerUP online—and a philosophy of positive youth development so that we go where there are educational things happening, or where there are after-school things happening, and we say, "How can we make this child whole", all the things a child needs to succeed, and that is a critical part of what we do.

We also focus very much on partnerships. We could not be where we are today without partnerships, and it is a lesson we have all learned over and over again, but I am here to tell you partnerships work. Partnerships with the government, partnerships with the private sector, partnerships with the non-profit.

So, for instance, we have private sector corporations like AOL giving us 100,000 Internet accounts for free. We have the Waitt Family Foundation giving us 50,000 PCs for free. Cisco gives us routers and switches, all we need. HP give us—this is free service—all we need of network printers. Cable companies—Ms. McHale, you are right—the cable industry has been phenomenal. They are coming to the table because I think we all collectively agree that children are going to be doing the jobs of the future and strengthening our economy of the future, we have to make sure they are in the 21st Century of the future, and that is what we are doing.

Another thing that makes us different is that we have designed our program to go to-scale. This is not a demo, this is not a pilot. This is a program that will go to-scale. We estimate there are about 15 million children who are in an after-school setting that need some help in positive youth development. If everything goes according to plan, we will be touching the lives of those 15 million children.

And, again, let me emphasize, we work within the schools, when the school is open and in an after-school timeframe. Where that is not possible, then we focus on the after-school space because we know the children leave the school and then have a lot of hours in the day when they can get into a lot of trouble.

So, our goal last year was to set up 250 sites around the country. We are over 300. Mr. Rush, we are in the Chicago Urban League and, Mr. Davis, you know—oh, he has left. We are in Michigan, but not in your district, but we will get there, I promise you that.

What are the lessons that we have learned? After-school space is essential. As important as the school day is, do not forget that children leave and have nothing to do, and there are vacations and there is summer, so the after-school space is so important to connect with.

We also know that partnership, not ownership, is essential, and that is how victory is gotten. Flexible solutions are critical. We can't say there is one cookie-cutter approach, we must give communities flexibility. And we must underscore the importance of the Federal role and the State role in making this happen.

What I would ask of you is that any Federal effort should require partnerships, make that a proven point of what you do. Provide the States flexibility wherever you can so they can combine funds, CTC

Funds with 21st Century learning funds, with anything we can do to combine funds. Make sure that we invest in technology programs so that we are looking at the whole child and not just can you push a mouse or a keyboard. And encourage the Federal partnerships that are already there and expand them. Help us work with 4H in USDA. Help us work with the neighborhood networks. Help us work with the schools through 21st Century.

The private sector and the non-profits are there to be a partner. There are so many resources that we can bring to the table that we know that the partnerships will result in all of our children having equal access to the Digital Age. Thank you.

[The prepared statement of Rae Grad follows:]

PREPARED STATEMENT OF RAE GRAD, CHIEF EXECUTIVE OFFICER, POWERUP

INTRODUCTION

Mr. Chairman and members of the Subcommittee, my name is Rae Grad and I am the Chief Executive Officer of PowerUP: Bridging the Digital Divide. PowerUP is a unique 501(c)(3) nonprofit organization that leverages public and private partnerships to bring America's underserved youth a wealth of positive youth development through technology. PowerUP's mission—to bridge the digital divide—involves focus and commitment to meet the needs of young people in the digital age. With help from our partners—national and local, public and private—we are preparing young people for success today and well into the future. On behalf of PowerUP itself, as well as its many corporate, non-profit, and governmental partners, I want to thank you for holding this hearing and inviting PowerUP to testify.

PowerUP is committed to ensuring that America's youth acquire the skills, experiences and resources that they need to succeed in the Digital Age. Launched in late 1999, PowerUP was established by Steve Case, then Chairman and Chief Executive Officer of AOL and now Chairman of AOL-Time Warner, and Secretary of State Colin Powell, formerly Chairman of America's Promise. Together, they sought to create a unique organization to help young people succeed in the digital age. PowerUP differentiates itself from other youth serving technology programs by: 1) providing a comprehensive life skills solution that focuses on the whole child, rather than simply serving as a computer distribution program; 2) creating a model that can be built to scale quickly; and 3) emphasizing the power of corporate, non-profit, and governmental partnerships to leverage existing resources. PowerUP's goal is to foster both positive youth development and technology literacy all across this country.

From Mr. Case's and Secretary Powell's shared vision, PowerUP was created, committed to the goals and aspirations for America's youth that are articulated in the "Five Promises," the cornerstone of America's Promise. The Five Promises include:

1. *An ongoing relationship with a caring adult*—PowerUP encourages and assists youth in its centers to be linked to a caring adult mentor to provide guidance and support.
2. *Safe places and structured activities*—Through PowerUP, young people spend non-school time in secure, supervised, and well-equipped PowerUP sites. Through PowerUP Online, PowerUP provides positive youth development activities (K-12) in an online environment.
3. *A healthy start in life*—Via PowerUP Online, young people can obtain online information about: preventive health care; fun activities involving health-related topics; healthy lifestyle and behavior choices; and nutrition.
4. *Marketable skills through effective education*—Using PowerUP online, young people learn how to master the technical skills necessary to succeed in the digital age. In addition to learning activities, online access provides information on internships, apprenticeships, summer jobs, and career opportunities.
5. *An opportunity to serve*—PowerUP links with local volunteer organizations to provide community service opportunities for PowerUP youth and their families.

In its first full year, PowerUP has enjoyed tremendous success. Our goal was to install 250 sites. We have met and exceeded that goal with sites in 43 states plus the District of Columbia and Puerto Rico.

POWERUP'S NONPROFIT, CORPORATE, AND FEDERAL GOVERNMENTAL PARTNERSHIPS

PowerUP owes a large measure of its initial success to its extremely generous corporate and foundation partners including:

- An initial $10 million start up grant from the Case Foundation to cover PowerUP's staff and operational needs as well as to support grants to local and national organizations to establish PowerUP sites in their communities. As a result of this initial funding, PowerUP was able to attract a diverse group of additional corporate and foundation partners who made contributions that supported a broad range of technological and non-technological needs.
- A donation from AOL-Time Warner and the AOL-Time Warner Foundation of 100,000 AOL accounts to enable PowerUP children to have access to the Internet and the creation of PowerUP Online, a web resource that provides children of all ages an interactive package of technology resources to reinforce scholastic achievement and digital literacy;
- A donation of 50,000 Gateway computer systems by the Waitt Family Foundation to be used at PowerUP sites around the country;
- Donations from Cisco Systems of networking equipment, including switches and routers, to service all sites established in 2000;
- A donation from Hewlett Packard of 1,750 printers to be used at PowerUP's sites;
- A donation from Time Warner Cable of high speed, Internet connectivity to multiple sites across the country; and
- Donations from PowerBar of healthy and nutritious snacks for students at PowerUP's sites.

Forging strong partnerships with nonprofits has also been key to PowerUP's rapid expansion. We have partnered with youth serving organizations like the Boys and Girls Clubs of America, which has 3000 facilities nationwide and serves 20 million youth annually, to enable us to quickly and easily deploy PowerUP's resources in "Operation Connect" centers throughout the country. Additionally, our partnership with the YMCA has afforded us the opportunity to establish technology labs in its existing community centers. Our partnerships with the National Urban League, which is using PowerUP's hardware, software, and online resources to establish and improve Urban League affiliate "Digital Campuses," and with ASPIRA, which has developed PowerUP centers to provide technology access to Latino youth, has enabled PowerUP to establish many centers that are serving the nation's minority communities. Finally, our partnership with Save the Children is assisting our penetration into underserved rural communities and American Indian reservations, as well as in some urban centers.

Equally important, we have begun working closely with a number of states and federal government entities, including the Department of Education, the Department of Housing and Urban Development, the Corporation for National Service/AmeriCorp Vista, and, most recently, the Appalachian Regional Commission, to expand further PowerUP's reach.

POWERUP'S FEDERAL PARTNERSHIPS

Our federal partnerships allow us to build and add value to existing federal efforts to provide services to youth. Most significant is our partnership with the 21st Century Community Learning Centers at the Department of Education. This vital program has been a major force in the growing effort to provide after-school opportunities for youth. It is an excellent example of how leadership on a federal and national scale can leverage significant resources. Over seventy percent of 21st Century Community Learning Centers funded under the program have had a strong technology focus and PowerUP is proud to partner with several of these to provide a technology-rich experience for hundreds of youth.

We understand that the 21st Century Community Learning Centers program may be consolidated with other programs and administered by the states. In our view, this movement towards state administration will allow for greater state involvement and commitment to after school technology programs. We hope that the focus on technology will be preserved and indeed strengthened, as this program is reauthorized.

We are also in the process of strengthening and developing relationships with the Neighborhood Network Program at HUD, the 4-H Program at USDA, and, hopefully, other federal agencies that reach children to ensure that PowerUP's resources are deployed in a manner that complements federal efforts.

Of course, our partnerships only matter if they make a difference in the lives of the children whom we all serve. Therefore, we are pleased to report that while PowerUP has only been operating for a little over one year, our local partners report very encouraging results:

- In New York, we recently launched the first PowerUP site for deaf and hearing impaired children at the Lexington School for the Deaf. The children arrived with their teachers and communicated their great excitement at having this newfound access to the Internet through AOL accounts, while school dignitaries and the media filled a room of 20 Gateway computers from the Waitt Family Foundation. We think that our experience at Lexington is important because study after study has shown that the disabled are severely impacted by the digital divide.
- In Tulsa, Oklahoma, an 8 member team from the National Civilian Community Corp. (NCCC), an AmeriCorps program, joined with the YMCA of Greater Tulsa to support PowerUP to build children's basic computer skills and Internet literacy. These Corps members work with students during the entire school day—and then assist after school with the YMCA programs. At the Kendal-Whittier school, NCCC members work with students one-on-one using the Internet as a research tool. At Burroughs Elementary, NCCC members supervise a computer room where students tackle research projects using the Internet. Said one NCCC member, "Watching the students go from not knowing how to use the mouse to being able to get on the Internet and surf is amazing. Students' eyes light up when they see us walk in the room because they associate us with Internet use." Not only is this a great experience for the students, but for the Corps members as well.
- In Pueblo, Colorado, we launched a site at the El Pueblo Boys and Girls Ranch, which serves emotionally and developmentally impaired students in a residential environment.

As our programs expand, PowerUP is implementing a national evaluation project to assess the effectiveness of PowerUP services and the impact of the PowerUP program on the youth that participate. We are also providing materials and training to assist PowerUP sites in conducting their own local-level program evaluations. These resources will aid site staff in clarifying program goals, documenting successes, and identifying challenges.

POWERUP'S PARTNERSHIPS WITH STATES

We are particularly excited about the partnerships that we are developing with our nation's governors. For instance, last July, Florida became PowerUP's first formal state partner. Governor Jeb Bush dedicated one-half million dollars appropriated by the state legislature to combat the digital divide to PowerUP Florida. Governor Bush also worked with Florida's corporate community through his IT Task Force to provide PowerUP/Florida with in-kind and monetary support. As a result of this partnership, 27 sites will be developed by local community-based organizations.

We are also very pleased with our partnership with Illinois Governor George Ryan, the Illinois State Board of Education, and the South Cook County Education Consortium. Through this partnership, PowerUP provided its program to 43 elementary and middle schools in economically challenged communities just south of Chicago. Many of these schools already receive assistance in connecting students to the Internet through the E-Rate and the Department of Education's 21st Century Learning program. PowerUP's partnerships with Governor Ryan, the Illinois Department of Education, and local schools are a powerful demonstration of how state and PowerUP resources both complement and leverage the federal government's investment in technology.

Installation is beginning on 50 new, school-based PowerUP centers in Mississippi, each of which will receive 10 to 20 new computers. The Mississippi PowerUP sites provide another excellent example of the state, the federal government, and public and private sector entities partnering for a common cause and leveraging each other's resources. The Mississippi Department of Education successfully applied for and received a $1 million AmeriCorps grant to provide mentors in each of these sites.

PowerUP recently entered into a partnership with the Appalachian Regional Commission and its 13 governors to begin creating new partnership technology centers and communities throughout the entire Appalachian Region. PowerUP is also in the final stages of negotiating a partnership arrangement with the Commonwealth of Virginia. We are currently working closely with a number of other states on partnerships and expect to announce additional ventures shortly.

BUILDING THE PARTNERSHIP MODEL

We have learned much during our first year, particularly about the power of the partnership model on which PowerUP operates. We have also had the opportunity to observe and participate in federal programs, such as the 21st Century Commu-

nity Learning Center program, that are geared towards assisting America's youth. From these experiences, we have developed an understanding of what elements make the partnership model work and how the federal government's programs serving youth can help foster these elements.

First and foremost, we have learned the importance of our partners, all of whom have been crucial to our success. The value of PowerUP's partners is not derived solely from the financial and in-kind assets that they have generously donated; it arises from the extraordinary synergies created by their participation. We have found that when one company, one state government, or one non-profit organization announces its participation in PowerUP, others with similar public policy aims and complementary assets are encouraged to follow its lead. Through this dynamic process, PowerUP has been able to scale-up quickly and leverage and combine the assets of its corporate partners. Based on our experience, we believe that any federal efforts to bring new technology to youth should encourage participants to work in partnerships, be they non-profit, corporate or government based, to ensure that each partner's assets are leveraged to the fullest.

Second, in our work with communities across the country, we have discovered the importance of flexibility in the use of funds. Such flexibility would allow us to utilize dollars from the Community Technology Center (CTC) program and from the 21st Century Community Learning Centers program, for example, to build after school technology capacity at the same sites. In this way we would not only satisfy the goals of both programs but also leverage the combined resources to enhance technology access for youths in these underserved areas.

Third, the PowerUP model has worked extraordinarily well when we have been able to collaborate closely with governors and state governments. In Illinois, in Florida, in Mississippi, and in other states with which we are working, we have found that state buy-in, both literally and figuratively, is crucial to PowerUP's efforts. But we have found that overall there are very few state resources committed to technology-rich after school programs for underserved youths. We believe that the substantial federal investment in such programs ought to include incentives for states to match federal dollars for after school programs with their own contributions and/or to build partnerships with business and nonprofit groups. We can turn the digital divide into a digital opportunity but we need the participation of government at all levels as well as business and community organizations.

CONCLUSION

PowerUP has come a long way in a short time. We still have much to do. With the assistance of our corporate, non-profit, and governmental partners, we are encouraging youth development by providing thousands of America's children with access to technology and technology skills. By the end of 2001, we hope to assist even more children. We also hope that our success will serve to encourage others to forge useful and enduring public-private partnerships to assist America's youth. To learn more about PowerUP, we invite you, Mr. Chairman, and all of the members of your subcommittee to visit our website—at www.powerup.org. We also would welcome the opportunity to take you on a guided tour of one of our many PowerUP sites around the country.

We thank you for this opportunity to appear before you and look forward to answering any further questions that you have.

Mr. UPTON. On the nose, 5 minutes. That was wonderful.

Ms. House.

STATEMENT OF JENNIFER HOUSE

Ms. HOUSE. Good morning, Mr. Chairman and Ranking Member Markey and other members of the committee. Thank you very much for your support of the education technology and the opportunity to testify before you today on that subject.

I am Dr. Jennifer House, Vice President of Strategic Relations for Classroom Connect, an Internet education company that develops and markets original Web-based curriculum products and teacher professional development programs for the K-12 education community.

I am also pleased to represent the Software and Information Industry Association. SIIA is the principal trade group of the soft-

ware code and digital content industry, and has long been at the forefront of education technology.

In today's information age and global marketplace, intellect and innovation give the United States its competitive edge and make a highly educated and skilled citizenry essential. To achieve this, our nation needs a comprehensive, national education and workforce development strategy that ensures that all students achieve high standards and all citizens gain 21st Century knowledge and skills. Allow me to speak to two core elements of this—education technology and Federal leadership and investment.

The Internet provides anywhere, anytime, anyplace access to courses that integrate rich curriculum, expert instruction and global discussions which were previously unavailable to many. Technology also facilitates communication between the school community,thus empowering parents to participate in their children's education.

Technology through the Internet is critical to providing students with this wide range of 21st Century knowledge and tools. Basic technology, literacy, and high-order cognitive skills, collaboration, and the ability for self-directed lifelong learning. An example of this is our product called Quest adventure learning series, which provides students the opportunity to follow an expert team of scientists to solve a mystery, such as what happened to the Mayan civilization, or the Anastasi Indians. During America Quest, Michael Mahoney from Cardinal Pocelli's School writes, "Each student from grades three through eight have come up with wonderful theories about what happened to the Anastasi. It has been gratifying for me to watch them as they looked at the evidence, searched for clues, followed leads, and wrote numerous e-mail messages about their findings".

Finally, technology eases efforts to collect and analyze data, including on a student achievement, thus enabling data-drive decisionmaking and accountability by schools. At the same time, research and experience will inform our use of technology to improve teaching and learning and increase achievement. Much is already known, the key now is to develop replicable models that allow effective integration of technology for all teachers and learners.

The nation's elementary and secondary schools need Federal assistance to achieve these goals. They have three primary needs—infrastructure and access, software and digital curriculum, and well-trained educators. Federal leadership in public-private partnerships are critical to achieve these goals.

I laud Congress for the passage of the E-rate. It has been critical to ensuring our most economically disadvantaged communities have access to the nation's telecommunications and Internet infrastructure. The funding requests, which now double the FCC-set cap of $2.25 billion, are testament to how important these resources are and our nation's growing commitment to technology solutions.

U.S. Department of Education grant programs are a second important element of Federal K-12 support. We are participating in four Preparing Tomorrow's Teachers Today Grants, exemplary public-private partnerships which include schools of education, K-12 schools, and commercial entities, developing exemplary models to train teachers on the effective use of technology.

Trana Gann, a technology coordinator at the Houston Independent School District, has advanced her professional development without ever leaving the comfort of her home, using our Connected University Online professional development courses. These courses were developed with the Texas Education Agency to meet their particular State needs through a public-private relationship.

Finally, I would like to leave you with four policy initiatives that SIIA and Classroom Connect strongly Congress to initiate. First, target Federal education resources to national priorities, including technology, math and science, teacher quality, and disadvantaged students. Avoid regulations that inappropriately create barriers to the use of education technology.

Second, continue to expand efforts to ensure universal student and community access to telecommunications infrastructure and Internet technology via the nation's schools and libraries.

Third, target Federal R&D to address gaps in private investment, including unserved niche markets, basic cognitive research, and large-scale empirical evaluations that identify effective models.

Finally, increase investment in training all educators to effectively integrate technology into the curricula, including pre-service and in-service training.

Many of these principles are reinforced in the recent report of the Bipartisan Web-Based Education Commission. I encourage you to read it. Thank you for the opportunity to present to you today, and both Classroom Connect and SIIA are committed to helping you move forward with these efforts.

[The prepared statement of Jennifer House follows:]

PREPARED STATEMENT OF JENNIFER HOUSE, VICE PRESIDENT OF STRATEGIC RELATIONS, CLASSROOM CONNECT, INC. ON BEHALF OF THE SOFTWARE & INFORMATION INDUSTRY ASSOCIATION

Good Morning Mr. Chairman, Ranking Member Markey, and members of the Committee. Thank you very much for the opportunity to address you today on the subject of education technology. My name is Jenny House, and I am Vice President of Strategic Relations for Classroom Connect, an education company that provides online curriculum products and professional development solutions to support K-12 standards-based teaching.

I am also pleased to represent the Software & Information Industry Association as chair of SIIA's Education and Workforce Development Policy Committee. SIIA is the principal trade group of the software code and digital content industry, with a membership of 1,000 companies building the digital economy. SIIA has long been at the forefront of efforts to integrate technology into education and education policy.

In sharing SIIA's perspective and policy goals, I bring my own 30+ years of experience as a teacher, school and district administrator, and hardware and software company executive. While SIIA member companies and their technology serve the entire broad education and training market, my comments will emphasize elementary and secondary education to which I have devoted my professional life.

National Education & Workforce Strategy

First, let me thank this Committee for its strong support of education and education technology. Federal leadership and investment has been critical to local and state efforts to bring the benefits of instructional technology to all students, especially those in the most disadvantaged communities.

In today's information age and global marketplace, intellect and innovation give the United States its competitive edge and make a highly educated and skilled citizenry essential. This fact is no more clearly demonstrated than in the high technology industries now driving the global and digital economies. However, the insufficient availability of skilled workers recently forced the nation's high-tech companies to request a temporary increase in the number of foreign-born professionals allowed into the U.S. to meet their workforce needs.

We all agree this short-term fix is inadequate. Our nation needs a comprehensive, national education and workforce development strategy that ensures all students achieve to high standards and all citizens gain 21st Century knowledge and skills. Allow me to speak to two core elements of this solution: education technology and federal leadership and investment.

Vision of Education Technology

Learning through the use of, and about, technology and the Internet are critical to meeting our education and training goals. As uses are refined and integrated, technology and the Internet are encouraging innovation in education structure, policy and practice. The result is a transformation of teaching and learning, and improved educational efficiency, opportunity, effectiveness and student achievement.

These educational improvements can be organized around three technology benefits: enhanced learning, 21st Century skills, and administrative effectiveness.

• **Enhanced Learning.** Software and web-based learning provide tools for the ideal student-centered learning model. Access to real-time, real-world content and exploration engages the student and drives the thirst for knowledge. The Internet provides anytime, anywhere access to courses that integrate rich curriculum, expert instruction, and global discussions, and which were previously unavailable to many. And technology enables self-paced, individualized learning in which integrated diagnostic assessments are linked to curriculum in a way that best meets the unique learning interests, needs and styles of students.

Classroom Today provides a comprehensive framework of thematic units which cover topics related to a teacher's curriculum. Through an interactive educational Website, Classroom Today provides a natural way for teachers to integrate up-to-the-moment information from and interactivity of the Internet into the classroom on a basis consistent with individual teacher calendars. The Website is used by subscribing classrooms to explore and research topics in science, social studies, math, and language arts guided by a series of open-ended questions. Each unit features curriculum content wrapped around pre-qualified Web resources and supported by lesson plans, activities, and tools such as links to national and state standards as well as related assessment strategies.

• **21st Century Skills.** Success today requires a set of abilities not necessary a generation ago. Technology is critical to providing students with this wide range of 21st Century knowledge and tools. These skills begin with basic technology literacy, including the ability to find and analyze information on the Internet. Technology also facilitates higher-order cognitive skills such as problem solving and the ability to draw and communicate conclusions. Finally, it encourages collaboration and the ability for self-directed and life-long learning. Many will only acquire these skills in a timely manner if given access at school.

An example of this is Classroom Connect's unique *Quest* adventure learning series, which provides students, teachers and parents with the opportunity to follow an expert team, in real time, on their travels around the world on an educational exploration. Twice a year for four to six weeks, a team of adventurers and curriculum experts explore a mystery such as what is taking place today in the Mayan ruins in Belize. Students around the world are communicating with scientists on site and other related experts to solve the mystery of what happened to the Mayan civilization. The team on site communicates via portable computers and satellite technology carried on their backs for student viewing the next day. *Quest* subscribers direct the journey as they vote on the team's next destination and fact finding strategy and email the adventurers with questions, ideas, and insights during the trek.

• **Administrative Effectiveness.** Technology also brings efficiencies to educational management. The Internet opens the market to non-traditional providers, thus enhancing education competition and student choice. It facilitates communications between the school and community, thus empowering parents to participate in their children's education (provided they have Internet access). Technology eases efforts to measure and monitor student progress, and to improve data-driven decision-making and accountability. The result is effective data management, procurement savings, and other cost efficiencies long enjoyed by business.

I encourage you to review the Education Anytime, Anywhere section of SIIA's *Trends Shaping the Digital Economy* report for more details and case studies (http://www.trendsreport.net/education).

Continued technology advances will further enhance this value through hand-held computers, e-books and other low-cost devices, two-way interactive video and voice streaming, and wireless technologies. At the same time, research and experience will inform our design and use of technology to improve teaching and learning and increase achievement. Many examples of success already exist. SIIA's *2000 Research*

Report on the Effectiveness of Technology in Schools reviewed existing research and found that technology increases educational opportunities and student achievement, and that the degree of effectiveness depends on the match between such variables as student needs, software design, education goals, and educator training. While more research is needed to further refine our understanding, a primary goal now is to develop and implement scalable and replicable models that allow the effective integration of technology for all teachers and learners.

Achievement of these technology-driven educational improvements requires that all schools and students have access to high-quality digital tools and curriculum, and that this technology is effectively integrated into teaching and learning.

Education Needs

The nation's elementary and secondary schools need federal assistance to achieve these education technology goals. They have three primary needs: infrastructure and access, software and digital curriculum, and well-trained educators.

In addressing these needs, federal assistance must recognize the unique challenges schools face in funding technology. It is a relatively new item in a budget crafted at the margin and slow to change. Technology is a relatively expensive item in a budget that devotes most resources to personnel and operations. And technology is a hybrid item in a budget that categorizes costs as either capital or recurring. As a result, our nation's K-12 schools spend only about one-twentieth per student on technology as does the private sector spend per employee. Federal investment is critical to ensuring the necessary investment as local communities and educators adapt to this change.

Infrastructure and Access. Schools need assistance in obtaining the appropriate telecommunications and technology infrastructure and access, including connectivity and hardware. This is especially the case in many urban and rural communities where access is more difficult and more expensive to obtain, and of course for high-poverty districts that are severely lacking in resources.

Software and Digital Curriculum. Schools need high quality software and digital curriculum to reap the benefits of technology and the Internet. These tools must be learner-appropriate and safe, matched to education needs and standards, incorporate effective pedagogy, and be designed for fluid and effortless integration into the curricula and school management. Educators have neither the time nor resources to develop these tools nor translate raw content into curriculum.

Well-Trained Educators. Perhaps most critical to the success of education technology, schools need educators that are able to effectively integrate technology into the curriculum. Technology provides exciting new tools that can transform a teachers methods and role, and invigorate their experience. With this paradigm shift at an early stage, educators need training and practice. Studies repeatedly identify the lack of teacher training as a key barrier to the more effective use of technology.

Public-Private Partnerships

Public-private partnerships and federal leadership and investment are critical to the nation's ability to address these education needs and transform the vision of technology into reality for all students. Federal leadership serves as a catalyst for innovation, reform and improvement in our nation's education and training system, while federal resources leverage the state, local and private investment necessary to fuel this national effort. At the K-12 level, federal investment provides more than one-third of the resources used by local schools to access, acquire and integrate technology.

The E-Rate has been critical to ensuring our most economically disadvantaged communities have access to the nation's telecommunications infrastructure that serves as a base for their educational efforts. The yearly funding requests, now double the FCC-set cap of $2.25 billion, are testament to both the importance of these resources and to our nation's growing commitment to technology solutions.

U.S. Department of Education grant programs are also an important element of federal K-12 support. These grant resources enable local schools to leverage their telecommunications and Internet access through the software and online learning tools important for teaching and learning innovation and improvement. For example, many schools supplement federal grants with state and local funds to subscribe to Classroom Connect's services.

At Classroom Connect we believe educators need a broad range of instructional techniques and technology proficiencies to teach and inspire their students. Professional development is key to successful implementation of any curriculum in the schools, and it is critical in the relatively new arena of integrating technology into the curriculum. Our professional learning suite fulfills these needs with a tailored mix of Web-based learning, onsite instruction, conferences and publications. We

have developed our *Connected University* online professional development on a foundation of anywhere, anytime, any pace learning for teachers and administrators. We are participating in four different federally funded projects through the Preparing Tomorrow's Teachers To Use Technology (PT3) grants. These are exemplary public-private partnerships which include schools of education, K-12 schools/agencies, and commercial entities such as Classroom Connect. These projects prepare teachers to effectively incorporate technology into teaching and learning while developing standard of excellence, and prepare the best educators to teach our nation's future leaders.

We also participate in several important not-for-profit partnerships as well. Our partnership with the Stanford Research Institute (SRI) is analyzing the effectiveness of online learning and teaching that benefits the entire educational community, commercial as well as public. A second partnership is with the SchoolFirst Foundation, which is using our products in some of the nation's disenfranchised schools to study the impact of online learning for students from low socio-economic neighborhoods. We also have content partnerships with the American Museum of Natural History, the Library of Congress, and NASA.

Policy Solutions

SIIA strongly encourages the Congress, working with the Administration, to enhance the federal support and leadership necessary to realize this education technology vision and ensure all students achieve to high standards and gain the necessary 21st Century knowledge and skills. Such policies should promote public-private partnerships that help provide all schools and students with access to high-quality digital tools and curriculum and their effective integration into all appropriate aspects of teaching and learning.

These policy principles are largely reinforced by the findings and recommendations of the bipartisan Web-Based Education Commission, led by former Senator Bob Kerrey and Congressman Johnny Isakson. I encourage you to review their recent report, *The Power of the Internet for Learning: Moving from Promise to Practice,* as well as SIIA's testimony to the Commission (http://www.siia.net/shared content/govt/issues/edu/SIIAWebComRecs.pdf).

In general, it is the view of SIIA that public policies should: (1) neither prejudice nor inappropriately favor technology and web-based education; (2) rely to a great extent on consumer empowerment and market competition; and (3) make the long-term investment in technology, including infrastructure, research and development, and teacher training.

More specifically, SIIA encourages federal policies that seek the following with regard to K-12 education:

- Target federal education resources to national priorities, including technology, math and science, teacher quality, and disadvantaged students. In return, hold schools and educators accountable for ensuring all students achieve to high standards and gain 21st Century knowledge and skills.
- Increase federal investment in education technology, and ensure those resources are both flexible and stable to empower local districts to address their unique technology needs and goals. The resulting demand creates competition among publishers and spurs technology innovation, quality and reduced prices.
- Continue and expand efforts to ensure universal student and community access to telecommunications infrastructure and Internet technology via the nation's schools and libraries. As I mentioned, the E-Rate has been invaluable in providing connectivity and access for our nation's schools, libraries and students. Any efforts to achieve this goal and close the digital divide must ensure our neediest schools and libraries continue to have dependable telecommunications access that is protected from the often unstable federal appropriations process. Many classrooms, particularly in the most disadvantaged communities, remain to be connected.
- Avoid regulations that inappropriately create barriers to the use of education technology. Recognize that a supportive and dynamic policy environment is needed for technology to emerge successfully from today's challenging and relatively early development stage. Rely on balanced solutions, public-private partnerships, industry self-regulation, and consumer education and local communities to ensure student online safety and privacy.
- Increase investment in training all educators to effectively integrate technology into the curricula, including pre-service and in-service training. Encourage public-private partnerships that take advantage of the expertise of companies like Classroom Connect and their ability to provide web-based teacher training and facilitate online support groups.

- Target federal R&D to address gaps in private investment, including unserved niche markets, basic cognitive research, and large-scale empirical evaluations that identify effective models. Emphasize public-private partnerships to ensure the most relevant research is funded, findings directly influence product development, and government does not distort the incentive for private investment through inappropriate competition.

Conclusion

In conclusion, Mr. Chairman and Members of the Committee, SIIA and its member technology companies understand first-hand the importance of a highly-skilled workforce. And we recognize the need for a comprehensive national education and workforce development strategy that ensures all students achieve to high standards and all citizens gain 21st Century knowledge and skills. As my testimony has outlined, the elementary and secondary education reforms and innovations created by technology tools provides a critical target for federal leadership and investment. Public-private partnerships such as those being undertaken by Classroom Connect should be core to this strategy. On behalf of SIIA and the high tech community, I extend our commitment to work closely with you to enhance this partnership and realize our nation's educational and economic goals.

Thank you for the opportunity to testify. I am pleased to answer any questions.

Mr. UPTON. Thank you.

Dr. Koster.

STATEMENT OF EMLYN H. KOSTER

Ms. KOSTER. Mr. Chairman, members of the subcommittee, I appreciate this opportunity to be with you and commend you on focusing on technology and education innovations.

My name is Emlyn Koster and I, since 1996, have been President of Liberty Science Center in Jersey City, opposite Manhattan.

Liberty Science Center's mission is to be an innovative learning resource for life-long exploration of nature, humanity and technology supporting the growth of our diverse region and promoting informed stewardship of the world. Our onsite audience is now over 6 million since opening in 1993.

Today I would like to highlight how telecommunications technology and the Internet have been critical in enabling Liberty Science Center to expand its services from being available just onsite. We are not a museum in any traditional sense of the term.

The first program to highlight for you is our Live from Cardiac Classroom series. Working with the surgical team at Morristown Memorial Hospital in New Jersey, part of the Atlantic Health System, and with the help of a visionary trustee, cardiologist Dr. William A. Tansey, and with Johnson & Johnson and Verizon as other corporate supporters, we have created this one-of-a-kind operating room experience using a dedicated T1 line for videoconferencing. Students watch and interact in real time with all operating team members, immersing themselves in ever facet of coronary bypass surgery. Our science educators facilitate a powerful learning experience that includes examination of all instruments used by the surgical team during the videoconferencing. The discussion ranges from risk factors to medical careers. This program also features pre-visit teacher activities and a curriculum packet that helps prepare students for this dynamic, possibly life-changing, experience. Our latest enhancement in this type of program occurred just last week when we premiered Live From Brainworks, a similar program that links with Overlook Hospital in New Jersey and highlights different kinds of neurosurgery.

The second program I would like to highlight for you is our large-scale collaboration with the New Jersey Department of Education that provides onsite, offsite and online science education services to the State's most at-risk school districts, known as Abbott Districts.

This innovative science education initiative is one of the most unique and extensive found anywhere in the country. During the last school year, 170,000 students benefited from our designed interactions. Of this total, 100,000 used onsite programming, 66,000 offsite school-based programming, and 4,000 online videoconferencing. As well, over 100,000 teachers participated in school day, weekend and summer professional opportunities. And over 25,000 family members from these communities used their free passes to enjoy a Liberty Science Center visit.

In establishing this long-term partnership, we convinced the State Department of Education that our programming would add value to its science improvement initiatives. We demonstrated how our field trip, traveling science, and videoconferencing curriculum materials are all aligned with Stat and National Curriculum Content Standards. We demonstrated how our teacher professional development workshops and institutes are attuned to the emerging State certification requirements, and we thoughtfully suggested the inclusion of a third emphasis on the family to extend school and science center learning into the home.

Use of telecommunications technology and the Internet are key elements in the successful implementation of all of our school programs. This year we will host 350 Electronic Field Trips on topics that include animal habitats, simple machines, human respiration, insects and energy conservation. Each link is supported by a classroom package of curriculum material for pre- and post-connection classroom activities. The polished production values of these Electronic Field Trips enable the teacher and our science educators to maximize the learning impact of this type of distance learning.

If you visit our Website, you will find extensive online resource material that supports both of these programs and other resources about the learning and teaching of science. Often, field trip visits to science centers and museums have little pedagogical focus and can seem disconnected from school. At Liberty Science Center, teachers can structure their student explorations through a focus on a small set of exhibit experiences that lead their students to complete a design challenge.

Mr. Chairman, I hope that these remarks have given you valuable insights into the innovative programs at Liberty Science Center, and especially how telecommunications and Internet technologies have enabled the development of new ways to extend the impact of our mission. Thank you very much.

[The prepared statement of Emlyn H. Koster follows:]

PREPARED STATEMENT OF EMLYN KOSTER, PRESIDENT AND CEO, LIBERTY SCIENCE CENTER

Mr. Chairman, Congressman Markey and members of the Committee—I much appreciate this opportunity to be with you here today and commend you for focussing on technology and education innovations. My name is Emlyn Koster and since 1996 I have been president of Liberty Science Center in Jersey City. To give you a frame of reference in case you have not yet had the opportunity to visit us, we are on the New Jersey shore of the Hudson River in Liberty State Park facing Ellis Island, the Statue of Liberty and Manhattan skyline.

Liberty Science Center's mission is to be an innovative learning resource for lifelong exploration of nature, humanity and technology, supporting the growth of our diverse region and promoting informed stewardship of the world. We are not a museum in any traditional sense of the term. Our onsite audience, now over six million since opening in 1993, learns through multimedia exhibitions, giant screen films, 3D laser shows, photo exhibits, and activities and programs that encourage understanding of science and technology. These experiences then extend into schools, community centers, and homes through numerous traveling science programs and electronic connections that use videoconferencing and Web technologies. Our philosophy that seeks relationships with schools and homes establishes Liberty Science Center as a valuable educational resource, and not just an enjoyable destination.

I am here today to highlight how telecommunications technology and the Internet have been critical in enabling Liberty Science Center to expand its services from being available just onsite.

The first program to highlight for you is our *Live From . . . Cardiac Classroom* series. Working with the surgical team at Morristown Memorial Hospital in New Jersey, part of the Atlantic Health System, and with the help of a visionary trustee, cardiologist Dr. William A. Tansey, and with Johnson & Johnson and Verizon as other corporate supporters, we have created this one-of-a-kind operating room experience using a dedicated T1 line for videoconferencing. Students watch and interact in real time with all operating team members, immersing themselves in every facet of coronary bypass surgery. Our science educators facilitate a powerful learning experience that includes examination of all instruments used by the surgical team. The discussion ranges from risk factors to medical careers. This program also features pre-visit teacher professional development activities and a curriculum packet that helps prepare students for this dynamic, possibly life-changing, experience. Our latest enhancement in this type of program occurred just last week when we premiered *Live From . . . Brainworks,* a similar program that links with Overlook Hospital in New Jersey and highlights different types of neurosurgery.

The second program I am profiling for you is our large-scale collaboration with the New Jersey Department of Education that provides onsite, offsite and online science education services to the state's most at-risk school districts. As you may know, these are called Abbott districts as a result of a New Jersey Supreme Court landmark ruling. There are thirty of them, almost all are urban, and their enrollment totals 270,000.

This innovative science education initiative is one of the most unique and extensive found anywhere in the nation. Prior to 1997, and within our home community of Jersey City, for example, less than 500 of 32,000 students visited Liberty Science Center each year on field trips and local families rarely walked through our doors. The Abbott Partnership Program has defined a new reality. During the last school year, 170,000 Abbott district students benefited from our designed interactions, 26,000 of them from Jersey City. Of this total, 100,000 used onsite programming, 66,000 used offsite school-based programming, and 4,000 used online videoconferencing. As well, over one thousand Abbott district teachers participated in school day, weekend and summer professional development experiences. And, over 25,000 family members from Abbott communities used their free passes to enjoy the excitement of a Liberty Science Center visit.

In establishing this long-term partnership, we convinced the State Department of Education that our programming would add value to its science improvement initiatives. We were not in search of a handout, but stressed our desire to earn public sector support through collaborative involvement with science education reform. We demonstrated how our field trip, traveling science, and videoconferencing curriculum materials are all aligned with the New Jersey Core Curriculum Content Standards. We demonstrated how our teacher professional development workshops and institutes are attuned to the emerging state certification requirements. We thoughtfully suggested the inclusion of a third emphasis on the family to extend school and science center learning into the home. And, we offered to provide families with a free pass for use at the Center, a quarterly newsletter, and monthly community evenings as part of an inclusive package of science education services.

Use of telecommunications technology and the Internet are key elements in the successful implementation of the Abbott Partnership Program, and indeed in all of our school programs serving the surrounding four-state region. Every day from the floor of Liberty Science Center we use videoconferencing technology to bring the excitement of our exhibits and science experts into classrooms. Through two-way, audio and video, ITV or ISDN based technologies, students interact with our science educators on a host of activities that support the classroom curriculum at all grades. This year we will host 350 different connections on topics that include animal habitats, simple machines, human respiration, insect study, and energy conservation.

Each 45-minute link is supported by a package of curriculum material that includes pre- and post-connection classroom activities. The polished production values of these *Electronic Field Trips* enable the teacher and our science educators to maximize the learning impact of this type of distance learning.

If you visit our website, you will find extensive online resource material that supports both of these programs and other resources about the learning and teaching of science. For *Cardiac Classroom,* you will meet the doctors and watch taped footage online. For educators, there is a teacher's guide providing lesson plans and other activities to complement the *Live From*... experience. For *Electronic Field Trips,* teachers also find a host of support materials that extend the impact of their videoconference connections. Additionally, our online resources repeat our complete field trip curriculum of *Discovery Challenges.* Often, field trip visits to science centers and museums have little pedagogical focus and therefore can seem disconnected from school. At Liberty Science Center, teachers can structure their student explorations through a focus on a small set of exhibit experiences that lead their students to complete a design challenge. The availability of Internet and Web technologies has enabled free access to these valuable curriculum materials.

Mr. Chairman, I hope that these remarks have given you valuable insights into the innovative programs at Liberty Science Center, and especially how telecommunications and Internet technologies have enabled the development of new ways for science centers and other types of museums to extend the impact of their mission.

I would be pleased to host at anytime a visit by you and any of the subcommittee or full committee members. You can now reach us by light-rail, ferry and road, and of course online at <www.lsc.org>. Thank you again for this opportunity and I look forward to any questions you may have.

Mr. UPTON. I want to thank all of you for your wonderful testimony, and also by complying with our committee rules of actually submitting it either online or on-paper 48 hours in advance. It was a joy to read much of the testimony over the last couple of days and to try and get prepared for today's hearing.

I want to also compliment the staff on both sides for their work in getting us ready.

We all have a number of questions, and at this stage we will alternate between sides, although I am convinced that we are all on the same side, for 5 minutes, and we will try to limit our questions and answers to 5 minutes so that we can get a number of members through this process before the bells ring and we come back, and hopefully we will have at least one round or two as members pop back in from the other hearings that they have.

As I have toured a number of my different institutions, whether it be libraries or schools, in schools at all different levels, from my after-school neighborhoods, and some tough neighborhoods in my K-12 and my intermediate school districts which are county-run institutions branching out to the individual schools. Yes, I located my Catholic schools and other private schools that are tapped into the system. And I looked at my university structure as well.

One of the important messages to me is the strong importance of making sure that we have the qualified teachers in the classroom, able to use the material and the equipment that is there. In fact, I commented earlier this week in one of my schools, I was a student when I think the overhead projector was first invented, and I can remember my sixth grade teacher leaning across, wanting to know if it was going to be the right way on the blackboard, and having to look around, as it was the first time that he had used it. But I say that because in my District in Kalamazoo, we have Western Michigan University. Western Michigan is a public foyer university. It, along with Eastern Michigan and Central Michigan Universities, those three universities train more teachers

for the classroom than any other three universities in the country. And Western Michigan is on a race right now to be the first public foyer institution to be completely wireless in all of its facilities, classrooms and dorm rooms, by this fall, racing with the University of Wisconsin. It is "Down Wisconsin", not "On Wisconsin" this week, but it is great to see this competition that is out there, particularly as they are in the business of training the teachers and having the classrooms that can do that.

And I guess my first question to some of you here is, tell me exactly how—as we look particularly at the Michigan angle, Dr. Spencer, and the wonderful work that has been done—what programs do you have in-hand to actually train some of these teachers? I visited in intermediate school district in Berian County 2 weeks ago, I guess it was, and when I did this conferencing of the 500 students, I went into the room and there were literally 50 teachers in there that were being trained to know how to set up a WebPage, to do a whole number of things. It was great to see that happen. But what type of resources do you have, and are you doing that to train those teachers? And, Dr. Spencer, before you answer, I would be remiss in my visit to those schools, it was wonderful as the teachers talked about the access to the computers they are going to get from the number of companies that are doing it. One of the complaints, though, that I heard was, particularly the resource teacher who is actively working with all of—in this particular classroom, St. Joe High School—all these students, and because the resource is not a teacher, doesn't have—isn't doing math or social science, though, in fact, she was working with all—she does not qualify for that. Is it free, or a reduced-rate computer?

Mr. SPENCER. Mr. Chairman, the Teacher Technology Initiative provide $110 million for the 90,000 full-time teachers. There will likely be a second round opportunity for those that did not qualify in——

Mr. UPTON. She is actually training the teachers and working with the kids, and I thought, boy, somehow I am a second-class citizen here, I am not able to get the same benefit that, in fact, I am really doing so. I said I would mention that to you when you came to testify, to see if I can't——

Mr. SPENCER. Mr. Chairman, I not only have written it down, I will speak to the Governor about it as soon as I return. And the Legislature and the Governor have talked about those that have not been qualified in the first round—special education teachers in school districts—there are several other tiers of critical providers in the K-12 community that need to be part of that program and will likely be funded in the second-round initiative.

If I might, Mr. Chairman, in response to the online professional development, it is probably one of the most important issues that we face not only at the K-12 level, but also at the higher education level.

In our case, we have joined with our friends down the table here, and I neglected to mention that earlier. Jennifer House, we have recently a public-private partnership that Michigan Virtual University has engaged with Classroom Connect, and we are going to be providing their courses to our teachers.

Second, as I mentioned earlier, we probably will have the most aggressive information technology initiative in the country launched—and Governor Engler will announce this on Monday—we will be providing through the National Education Training Group, NETg, over 700 online IT courses for all of our teachers across the State for free for the next 3 years.

In addition to that, we will be providing those courses to the students, both at K-12 and higher education, and this, we hope, will be a jump-start to get our teachers up-to-speed. No barriers. No cost barriers, and we want everyone on the same page in that regard. I think those tow initiatives will help our teachers greatly.

The third thing I would respond by saying is that you are right on the mark with regard to higher education. Western Michigan University is preparing to launch the first totally online educational technology Master's Degree program. Michigan State University, Dr. Peter McPherson, his organization is right behind them launching another Master's Degree. All of our colleges and universities in the State are ramping-up to make this a focus for the future, and that is where the professional development opportunities will happen for our pre-service teachers. It is not just our current teachers at the K-12 level, it is those young people that are coming through tomorrow that will make a difference as well, so we are going to try to service both.

Mr. UPTON. Anybody else like to comment on—Ms. McHale.

Ms. MCHALE. I think I mentioned in my remarks that Cable in the Classroom launched something called the Professional Development Institute, specifically targeted to training teachers—clearly, it is not enough just to put the technology in the classrooms—and at all levels, the base skill of using the technology, and then also more sophisticated use is where you will really begin to see improvement in the classrooms when we have done that. And we have taken a variety of approaches, some of which we have actual locations here in Washington and the surrounding area, where we bring teachers in. In other cases, we have mobile labs where we can actually take them out to the school. And then we have a variety of online services where—and Discovery has one called Shop Talk, where we get teachers online so they can begin to speak to each other how to do it. So, we are trying to take it as a sort of multi-level approach, but I think we would all agree that this is one of the most critical issues, to get the teachers trained.

Mr. UPTON. Ms. House.

Ms. HOUSE. We have a product that we call Connected University that offers online courses to teachers, both synchronously and asynchronously. Right now, we have over 150,000 teachers across the country participating in it, but what it allows teachers to do is learn how to use the Internet and integrate it into their curriculum and their assessment programs, linking with State and local standards. And we work with each of the States to customize courses so that it does meet the needs of the individual school districts as well as the States.

Mr. UPTON. Dr. Domenech.

Mr. KRISBERGH. I will just mention that the WISH program was really at a more fundamental level, right at the elementary school when the first access to the Internet is presented, and the training

is not only directly with the teacher and school, but also obviously with the student and, more importantly, actually, in a strange way, with the parents. So there is a whole interface between the teacher, the administration, and the school in using the Internet in a very basic way of using the Internet, and that is where the curricula is designed specifically in how to use the Internet, not so much in the content which it sounds like a lot of other players here are focused on—not to diminish it—it is just that the WISH program is really aimed at that most fundamental level of using and accessing the technology.

Mr. UPTON. Dr. Domenech.

Mr. DOMENECH. Let me quickly say that besides all of these wonderful programs that are there to support, what we have found from our principals and teachers at the building level to be a great investment and very much in demand, that we have begun to do in our school system is to place a full-time technology specialist in every school, to be available on a day-to-day basis to work with the teachers and really help us collect on the investment we have made in technology.

Mr. UPTON. And that is exactly the same person we are trying to get in the Michigan program, which I know is going to happen.

Mr. SPENCER. I will take care of that as soon as I get back.

Mr. UPTON. Dr. Koster.

Ms. KOSTER. I would just like to add a comment about the powerful role of the science center network in the United States to help with teacher professional development. The collective annual attendance onsite of science centers in this country is now 120 million at some 350 science centers, which is more people per year than attend professional sports live. And most of that audience, or a large percentage of that audience, is teachers bringing students on field trips. The videoconferencing that I talked about from Liberty Science Center is used to train teachers without them having to move from their school locations. They gather at videoconferencing sites and we help the teachers to be more effective and confident in handling science concepts through the demonstrations we can provide from the science center.

Mr. UPTON. I appreciate all of your answers, and I notice my red light is on, so I yield to my colleague, Mr. Markey.

Mr. MARKEY. Thank you, Mr. Chairman, very much.

Sister, back in the last half of the 19th Century, waves of Catholics started to hit this country, especially in New England. There was a reaction, obviously. As we all know, one of the three "Ks" of the "KKK" is Catholic. And James G. Blaine, in Maine, was successful in passing a constitutional amendment to his State's constitution which prohibited money being used in Catholic schools, although they used a broader term. It spread to many other places in our country.

Could you explain how the structure of this FCC E-rate program helps schools like yours to take advantage of this opportunity so that all children in the country can benefit?

Sister MCDONALD. Yes. I think it is currently 38 States have what we refer to as the "Blaine Amendment", which has specific prohibitions against direct aid to, in some cases it is all private schools, in others it is religiously affiliated schools.

Some of that is in the interpretation at the State level, what that really means, the State Attorney General, so that in some States where there are Blaine Amendments, people still can access certain programs that they can't in others.

The key part with the E-rate is that it is not in the Department of Education, it is not on the budget in the same way that some of the other ESEA programs are. So, when we are looking at this, it is not really Federal tax dollars, it is a fee that the providers, telecommunications industry, is assessed in exchange for various other pieces of the whole telecommunications agenda.

But the money then is really not paid directly to the school, the school applies to USAC for the services, and it is funded. It is a third-party payer, really, in the way in which, in some cases, you have to do with some Federal programs.

Mr. MARKEY. Could you explain how that also benefits libraries in terms of their applications?

Sister MCDONALD. Yes. The library community has been missing from this, and the library community has been quite a player because the libraries don't really fall under the Department of Education.

The benefit is that a lot of the rules that would apply for funding purposes for schools that go through certain channels are not applicable in this case because it is a one-on-one, and I think that is important. The library community, as well, whether the individual library applies or they apply as a consortia, they are dealt with in terms of what they need, what they can afford to match, and so on. And what is important not only in terms of religious schools, but a lot of the private school community have philosophical differences that keep them from applying for Federal programs in terms of the strings-attached mentality and so on. That has not been a problem. As I said earlier, we are large purveyors of ESEA programs.

Mr. MARKEY. One final question, Sister. I think one of the key aspects of the E-rate program is that each one of the applicants has to have a technology plan they have to explain. In other words, having computers in the back of a classroom, which in many ways existed for the preceding 10 years before the E-rate passed, really doesn't do any good for the kids.

So, explain how the requirement that a technology plan has to be in place helps ensure that teachers and parents are involved in the overall implementation of a technology plan which benefits the kids.

Sister MCDONALD. In our case, most of our schools did not have a comprehensive technology plan. I mean, there was a budget line item perhaps to buy some computers. But what this program did was to heighten awareness that it is part of learning, not just a toy. And when people began to develop technology plans, it had to be approved, and that is the key part. It is not just a technology plan, these are approved technology plans that illustrate how one will use this effectively in an educational setting.

In most of our schools, committees were formed using parents. Parents are the primary benefactors, if you will, in terms of supplying the additional funding for this, and so on. But what we got to focus on was how this works home school as well as within the school, and how parents can channel their children from playing

with the computer to learning on the computer. And the plan, the technology plans, really helped to move this to the forefront of where we are going with technology, and teach children to use it discriminatingly. I think that is a key part, and we try that in the professional development as well.

Mr. MARKEY. Thank you, Sister, and thank all of you for everything you are doing to make this plan the great success that it has become. Thank you.

Mr. UPTON. Thank you. Mr. Davis.

Mr. DAVIS. Thank you. Let me start with Dr. Domenech. As a former President of the American Association of School Administrators, can you comment on the application process for the E-rate? Are there any administrative burdens that are faced by school systems which might not be as large and administratively sophisticated as Fairfax?

Mr. DOMENECH. Well, I have to say that initially there certainly were some problems in getting the program underway, but I would say that at this point we are certainly seeing the program work very effectively and efficiently. We are happy with the way it is operating, and certainly very much endorse its continuation. I can't see that there are any major bureaucratic glitches that we would recommend at this point.

Mr. DAVIS. Does anyone else have a comment on that?

[No response.]

Doctor, let me just ask you again, just for our school system in Fairfax, when you take a look at the school's current technology in education abilities, would you estimate that these programs are enabled by program funding—Federal, State, local and private—what is the rough component of that, and how do you reach out to some of these areas? It is tough to partner in some areas of our county, and in parts of the country it is harder to find business partners. We have been fortunate in Fairfax to have them available, and you have been great at getting them involved. What suggestions do you have for areas that may not have the same level of partnership abilities with business?

Mr. DOMENECH. Well, even in our county, as you know, there are areas such as the Mt. Vernon-Route 1 area, where we have difficulty in getting business partners because they are not necessarily near the Tysons Corner area where most of our business partners tend to come from.

What I think we have done, and other school systems in a similar situation need to do, is to really reach out to establish business partnerships that extend beyond jus the school district. For example, we have extensive partnerships with organizations like Oracle and Microsoft, which is not necessarily in our area, but they have been very helpful in helping us establish these partnerships.

They are a wonderful supplement to the limited funding that we have. Certainly, the bulk of the funding for technology in our area comes from the local county level efforts. We get hardly anything from the State and, other than the E-rate, very little at the Federal level.

Mr. DAVIS. Thank you. Let me ask Ms. McHale, have you seen any correlation between schools that are receiving the cable industry services and equipment in any increase that they have had in

terms of—I don't know how you measure it—test scores or ability to move on or proficiency?

Ms. MCHALE. I don't think we've specifically tracked that, but I think there is a lot of research which I have also seen in my role on the State Board in Maryland where you can see a direct correlation where you have got teachers who are trained and understand the technology and they can utilize these programs in the classrooms, that you get kids much more engaged in what they are doing, and then you begin to see higher levels of performance. I don't believe we, as an industry, have actually tracked it.

Mr. DAVIS. Measured it, but anecdotally you have seen it.

Ms. MCHALE. Exactly. And I can certainly speak to it from the Maryland context where we have definitely seen an impact where you have a sort of integration of technology and use of it in the classroom where you can really begin to see significant results. And, again, focusing on higher level skills and using technology as well, you can really begin to make significant inroads.

Mr. DAVIS. Thank you. Let me just ask Mr. Krisbergh one last question. Do you have any idea what it would cost to provide WISH TV on a national basis?

Mr. KRISBERGH. The bottom line is that the cost for the equipment is literally a dollar month for putting that equipment in the home, and the service itself is less than a dollar a month with all the services around, so we are really talking less than $2.00 for the cable operator to be able to supply full Internet access capability with e-mail. So, multiply that out.

Mr. DAVIS. Thank you very much.

Mr. UPTON. Thank you, Mr. Davis. Mr. Sawyer.

Mr. SAWYER. Thank you very much, Mr. Chairman. Before I forget about it, I want to thank Dr. House for her kind words about the technology grant program. Clearly, it doesn't meet the needs of an entire nation in all of its complexity, but it has made it possible for us to drive dollars to places where not only can it do good, but we can learn from the good that it is doing. And it is precisely that that I want to ask about.

We have heard a great deal of discussion today about the availability of technology, and that is important, there is no question of it. We have heard a great deal about content development in all of its exciting diversity, and what that means in terms of excitement in classrooms.

I am particularly, though, interested in how we are using technology in learning about learning, in the new ways in which the technology is applicable in classrooms, and how best to take advantage of it.

I suspect we are learning those lessons all across the United States day in and day out, but it is the organized research that I am particularly interested in. Let me just give you one example.

In my district, Kent State University, through a combination of these grants and State grants and private sector partnerships, have put together a Research Center for Educational Technology. For their purposes, they have posed the following three questions as central areas of focus. The first is, under what conditions can technology be used by students for problem-solving, inquiry, critical

thinking, and what are the effects of such use on student learning overall?

The second is, under what conditions do teachers learn, particularly pre-service teachers learn, to make decisions about effective uses of technology for higher-order thinking.

And, third, what alternative assessments, a topic that we heard touched on earlier, alternative assessments can be used to measure student learning when technology is used for higher-order thinking?

Can you talk to me a little bit about how we are learning about learning, and how we are spreading that more deeply into real-world classroom situations?

Ms. HOUSE. You mentioned our PT3 grants, and we are having great success with those. As you know, each grant, there is a fundamental element for research that is part of that, and that all of those models be disseminated across the United States so that that research is available and can be infused in the schools. And, remember, a K-12 school district has to be a part of that in each of the grants. So, that is one way.

Another is, as a company, it is absolutely important for us to have research going on to make sure that we are making the right kinds of products. We are in a public-private partnership with the Stamford Research Institute, who is monitoring how effectively teaching and learning is taking place, so that we can do that both with our curriculum products as well as our staff development products.

Mr. SAWYER. Other comments?

Mr. SPENCER. I think it is a great question. I am thrilled you brought it up. It is one of the reasons I took this job and left a traditional college presidency to go out on the bleeding edge, in a sense, instructional technology.

We are losing between 30 and 50 percent of our distance learners through attrition. One of the major problems we have is we are not preparing these distance learners to become successful distance learners.

We are preparing right now at the Michigan Virtual University a distance learners orientation tool program to help adult learners, high school learners, college and university learners, get better prepared for a higher probability of success for an online teaching and learning experience. And one of the components in that program, Congressman, is critical thinking, being able to differentiate between "if I see it, it must be true". That's critical, that we help them become differential learners.

Second, I think what you are going to see out there is a greater movement by accreditation, regional accreditation agencies, to get into the quality issues on a much higher level. The Lexington Group, of all the virtual university leaders throughout the country, has recently met with accrediting agencies to get into the quality issue.

And the third thing I would respond to is, I think what you are going to see is a greater emphasis on pre-test and post-test so that the learner has a critical learning path which is better tailor-made for their needs once they are going through it. Those would be the

three things that I think are pretty critical, in response to your question.

Mr. SAWYER. Thank you both for your response.

Mr. UPTON. Mr. Shimkus.

Mr. SHIMKUS. Thank you. It is a good panel and I appreciate your answers. It shows you some of the schizophrenia that we deal with, though, here in Washington, where we appreciate the use of the Internet to get to private and parochial schools, but we have problems with faith-based initiatives or education scholarships or other issues because we are involved, but then we don't like to say we are involved, and then we like to have third-party entities to administer the funds, and it is just part of the joy we have here in Washington in trying to sort this all through.

Two quick questions. I am going to throw this out to anybody who wants to answer. One is, having been a former classroom teacher for 4 years, my question is, are textbooks merging e-learning principles with CD Roms or server opportunities for use in classrooms, because I know when I got a textbook, we went through where we were going to buy our textbook, and they give us little 8mm films, or overheads, as Chairman Upton had mentioned.

And the second question is, what are we doing to protect one of my passions this cycle is screening technologies. I am a proponent of trying to move smut to a XXX domain field. What are you all doing to protect or help us protect our children from things, since we are using the Internet and they are going to have access to servers and WorldWideWeb, protect them from things that are out there that probably children shouldn't have access to?

Ms. GRAD. I would actually like to take a crack at that. Although we are in the after-school space, certainly the tools that we have to use are available. One is teaching children to know the differences and actually to have responsible—we call it "Internet Driver's Ed", we teach them how to surf safely.

Another thing is that there are very effective controls that we can put on the systems in the software and in the hardware to filter out the ability for children to go to advertising sites or not very appealing sites, and then we try to educate the parents and the teachers to be monitoring and to be very diligent.

Mr. SHIMKUS. And that is the role of having an individual there also, as some oversight in training them.

Ms. GRAD. Right. There is no substitution for supervision, actually. But while many of our schools do use blocking and filtering software, they are all required to have some kind of an ethical use policy in which the school, student and the parent makes a contract about how this will be used, how it will not be used, and what consequences might follow, and then the supervision is built around that. And we find that more effectively actually than blocking and filtering because if kids are sophisticated about it, you can get around blocking and filtering, but having a consciousness that it needs to be monitored and having individual responsibility for it are really primary for us.

Mr. SHIMKUS. Anyone else?

Mr. DOMENECH. We have also implemented systemwide Internet filtering for all our schools, as a very essential component of what we do and it is part of our Board policy.

I also wanted to address your question regarding electronic textbooks. That definitely is a direction that we are all taking. We have spent some time actually at Palo Alto with the Xerox people and some of the work they are doing with electronic textbooks, and the ability of teachers in the future no longer having to buy an entire textbook, but on-demand to get a particular chapter from a book that is relevant to the particular lesson that is going to be taught, and having that made available to the kids in the class. And many of the major publishers now are looking at and moving in that direction, and selling textbooks more on a subscription basis than necessarily a textbook.

Mr. SHIMKUS. With broadband capabilities, can't we see the ability to do direct screening for your video presentations or other——

Mr. DOMENECH. Oh, absolutely, but now you are getting into a significant area. You know, I had the opportunity to testify a couple of months ago before another one of our congressional committees on technology, and I made the reference that many of the school systems in America, when we talk about broadband technology, we talk about the superhighway, and it is like getting off a four-lane superhighway and onto a dirt road when you get into the school district. Most school districts don't have that broadband capability.

Mr. SHIMKUS. Thank you.

Ms. HOUSE. We have, in a public-private partnership with E-trust, developed a pamphlet for parents and educators on safety on the Internet because I think filtering is one part of it, but I also think education is key.

Mr. SHIMKUS. I agree. I thank you very much for your answers, and I yield back, Mr. Chairman.

Mr. TERRY [presiding]. Thank you, Mr. Shimkus.

Mr. Engel, you are recognized.

Mr. ENGEL. Thank you, Mr. Chairman. First of all, I want to thank all of you for the good work that you all do. I am obviously concerned, along with my colleagues, about the digital divide. And I have just gotten this brochure from PowerUP, Ms. Grad, and I am happy that you have three places, three groups, in my home county of Bronx, New York and one in Mt. Vernon, New York, which is also in my district, so we are very glad of the good work.

When I go around to different schools, I find that they tell me all the time that part of the problem is the school buildings are so old that it is impossible to wire them to get the technology into them. They can't be wired. The schools don't have adequate funds to put in the computers. The same old problem, I guess, in urban areas elsewhere.

We do have a school in my district, a public school, that has formed a collaboration with Manhattan College and Apple to provide computers to every student and create a supportive learning environment for its students.

I just wanted to throw out—I know we have votes and it is crazy today—but how can the Federal Government—Ms. Grad or anybody else who would like to comment—encourage broadband com-

panies such as cable and DSL provide to donate their services to schools, and schools where the buildings are too old to wire, any options for wireless systems, and what are the impediments for reusing these computers in schools? These are just some of the things I don't know—you may have said it before I came in and, if so, I apologize—but these are the kinds of problems I get all the time with people coming into my office.

Ms. Grad, do you want to try it, or anybody else?

Ms. GRAD. Sure. Obviously, anything that we can do to make an incentive for DSL, any cable companies, any of the TELCOS, anything we can do to encourage them to give us broadband connectivity is what we want. We only provide broadband connectivity. Where we can't get wires into the schools, we do use wireless and in certain instances satellite. The wireless technology is on its way, and anything we can do to encourage its growth—we don't think it is quite there yet to be able to do the volume that we are doing in the interactivity that we are doing, but we would love the Federal Government to entice, encourage, or otherwise induce corporations to give pro bono the services, the connectivity that we need.

And let me add, too, the cable industry actually has an initiative, and as it rolls out and as the technology becomes available and they are upgrading their systems, they actually make available to schools, free of charge, broadband access, access to it.

In terms of dealing with the wiring in the schools, it is clearly a challenge and, as I mentioned earlier, on the Maryland State Board, one of the areas we oversee is Baltimore City where truly this has been a challenge as they have gone into some of those older schools, and so they are doing it.

Part of the problem with wireless is that when you are looking for the rich multimedia that you want to get into the educational experience, wireless is simply not an appropriate remedy at this point in time.

Ms. MOORE. Congressman Engel, I just would say that wireless technologies are eligible for E-rate discount, so that is an option for schools who want to go in that direction. That is one of our eligible services.

Mr. SPENCER. One other thing I might add, Congressman, is that Internet2 is a nationally based research project to start dealing—not start, they have been dealing with the broadband issue, and connectivity, and the digital divide, and how all that pulls together. The same leadership team, in a sense, that came up with Internet1 is working in Ann Arbor, Michigan. That is where it is headquartered. And I think it would be a possible potential future discussion with Dr. Doug Van Howling at the Internet2 project. The committee might benefit from getting a real focused perspective on that. So, I just offer that as a future opportunity.

Mr. ENGEL. Thank you. Thank you, Mr. Chairman.

Mr. TERRY. Thank you. We are going to go a little bit out of order and, Ms. Eshoo, you are recognized.

Ms. ESHOO. Thank you, Mr. Chairman, I appreciate it. And I want to thank all the panelists, first of all, for the work that you do. This is a good-news panel, I have to tell you. I wish the entire Congress was in this room to hear you because we don't often hear

the kinds of things that you have brought forward today. So you have provided a very, very important snapshot, a picture, of what is going on with several different elements. So, I want to thank you, and I want you to know that it is a source of pride to me to have helped set up and had my hand in the Telecommunications Act. I think that we got it right with what we set up, and that is why I wish there were more members here today to hear how the E-rate actually does work.

Of course, your panel is broader than the E-rate, but the statistics about it are really quite startling. In 1994, before we had the E-rate, 3 percent of classrooms in our nation were wired, while in the year 2000 72 percent were. So, we have made progress.

Sister, it is wonderful to have a Sister on the panel, I have to tell you. PBVMs did not teach me, but you are representing all of my teachers, too. I cannot imagine what they would have done with us if we had had these technologies in the school when I was growing up.

You know politically that the E-rate has been tossed about. I hope the dust is settling on that. During the Presidential election and leading up to it, it was called the "Gore tax", and these things become political footballs. But now the dust is settling. I hope that the new Administration will leave this alone, and the Commerce Department. We have heard some very, very insightful things that you have brought forward out of the panel.

Is there anything that you can tell us today—because I think that those that may not be so inclined to support the E-rate want to hear how it might be able to be improved—have any of you had experiences that you can tell us that we need to build on—you know, the not-so-positive side of it? I mean, we can build on things and make them better, and that is what I want to do, and I think that a good part of the jury is in that we have done a good thing, but we can do better.

Do any of you want to add to that, or tell us what we can do better? You know, the criticism is in this bureaucracy, the bureaucracy is out of control. Is it? Should it be shrunk? Is there something specific we should be doing?

Mr. DOMENECH. Well, I indicated earlier to a similar question from Congressman Davis, that we think the E-rate is working, and if there is anything you can do to improve it, it is to increase the amount of money that we get.

Ms. ESHOO. I am glad you said it and not me, but it is more important that you say it. Anyone else? I know that we have got a huge tax bill on the floor today.

Sister MCDONALD. I concur with that. I think keeping it, at least never going below the funding cap, the $2.5. And you heard in earlier testimony, the demand far exceeds what the cap even allows. And what happens is that the higher ends wind up with the portional share in terms of wiring, and for many of the schools below an 80-percent discount level, they were not able to be funded for wiring. So that precludes people from moving ahead. So the funding is what is really driving that.

Mr. KRISBERGH. I might add that the whole focus on the schools is excellent, but I also think, as was brought up here, that bringing the home and the school-home connection into the equation is im-

portant, and maybe opening up the funding to include not just the school, but the home——

Ms. ESHOO. That may be the next step of it because we can't leave, as the President says, "any child behind, any school behind", but—it is the equivalent of pencil, you wouldn't send a child home without a pencil—I mean, we have them at home. So that is the other bookend in this, but we have to complete, I think, this round.

It is wonderful to see you here from Brisbane. I don't represent it, but it is in San Mateo County, that I love, and have represented for 10 years. Thank you for your outstanding work. And to the cable people, thank you for what you are doing. You just added to something where someone didn't even know that you offer what you do. So, rather than political beating-up on the floor, this hearing, Mr. Chairman, is constructive, and I thank you all. I think you are heroes and heroines in America for what you are doing.

Mr. UPTON. I just want to change one little word maybe for the record. It is not a "big" tax cut, it is a "little" one. Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman, and I don't know if we will have time because we all have to go vote. I have two questions I will merge into one.

During the 3 years of the program, the funding level has been capped at $2.25 billion, and I know the funding requests are double that. What can we do to provide more funding?

Also, in the concern that Mr. Shimkus has, and I share, is private and parochial schools seems to be lagging in E-rate funding behind public schools, can you account for the differing trends. And if you all could submit that to the record so we can have it because, in my own district in Houston, both my parochial schools—although we got a local Bell provider to wire one of our local schools so they could do that. But I appreciate it, Mr. Chairman, I know we all have to go vote.

Mr. UPTON. Thank you, and I am not sure that we are going to have members—this vote is on, and we have about, I am told, a few minutes, and then a big series of votes will start.

I do have a couple more questions, and I will yield if members run back and forth, as I did.

Ms. Moore, I have a question. I know that the FCC really does run the E-rate program. As I have visited my schools and libraries, I have been most impressed with the work that they have done, particularly in my district, for a large part, is indeed a microcosm of the country in terms of rural and urban, rich and poor, a very good blend of minorities, terrific learning institutions like Western and a number of community colleges as well, that Dr. Spencer related to, and we have got some terrific school districts and we have got some that need a little help in lots of different ways.

Chairman Powell is going to come testify before our subcommittee the end of the month, and I know the E-rate will—a number of members will be quizzing him in terms of his thoughts about where that program should go. And I don't know whether he formally will reach out to folks like you for input, as they look at some changes, but I am going to raise a situation in a hypothetical sense, though I know in fact that it is true.

If you have got a school district that perhaps has a relatively high poverty level among the families whose kids go to that school,

and therefore has a very high breakfast and lunch program, and yet the property taxes for that particular area are pretty decent. Maybe they have a large business that is there and people commute back and forth. They might have a particular industry that generates quite a bit of property taxes but, in fact—and it may be a very small community as well—it may be able to tap substantial dollars for their program which, let's face it, certainly was—in the context of a couple of years ago, every school needed that technology.

Is it not true that maybe—and they are at the very top in terms of the priority level that they receive funding—is it not true that if that school district decided, "Well, we did pretty well. It has been 2 years now since we got this large chunk of funding and we have put it to good use, but let's rewire, or maybe go to wireless, so let's go to the next step". And then you have got another school district perhaps in that same county—it doesn't matter really—and they may have tons more students, but their breakfast rate is substantially less. They are able to maybe qualify for just a little bit, and because this other school district, time and time again—year 4 now, but let's say year 8—maybe they can revamp a second, third or fourth time.

Should that be the case? Should there be some priority maybe for the schools that were at the end of the line at the beginning, the teams, the schools ahead of them get funding? Should there be a way for these other school districts that can't participate to the same degree because of the base, yet they have got maybe eight facilities, can't pass a bond measure for a variety of different reasons. Should there be some bonus later on, or at least some take-away points for a school that perhaps could—I don't want to use the word "rig" the system—be able to get something like that?

Ms. MOORE. Let me say, Mr. Chairman, that we are engaging in a dialog with FCC with respect to the priory system that it does set and that we must follow. And, indeed, with the emphasis on serving the neediest schools and, therefore, as you suggest, the 90-percent discount level, those who are so poor, in effect, that all they need to do is provide 10 percent of the cost of the actual services, do have the opportunity to enhance and build over the years, while those at the, say, 60-70 percent, who still have a significant portion of their students in the school lunch program, may never be able to tap those internal connection support because of the priority system and the way it is structured.

So we have begun a dialog with the FCC. Now that we are in the fourth year of the program, we can see the reality of this dilemma very vividly in the demand estimate that we do have, and so should the FCC make a decision to alter the priorities, we would certainly implement that according to their regulation.

Mr. UPTON. This was my second round. When I started my question, members hadn't come back, but I yield for her opening here for questions, the gentlelady from New Mexico, Ms. Wilson.

Ms. WILSON. Thank you, Mr. Chairman, I appreciate that. I have several questions, and I will be brief because I think they are going to be——

Mr. UPTON. I think we have 10 minutes before they start.

Ms. WILSON. Okay. On WISH TV, I understand that LSU is doing some kind of study on the efficacy of WISH TV, and I wonder when you anticipate that being released?

Mr. KRISBERGH. It is an ongoing process, we hope to have it done in the next 4 or 5 months.

Ms. WILSON. With respect to that, and maybe for some of the other members of the panel here, I was very interested in Mr. Sawyer's questions about what we are learning about learning, and how technology is impacting achievement which, as we all know, is the ultimate goal here.

What kind of—not anecdotal—but what kinds of systematic evaluation and results can we see when technology is used in the classroom? With all those professional development and support mechanisms and so on in place, how does it affect achievement?

Ms. MCHALE. I will take a stab at it—and, again, from my role in the Maryland State Board of Education where we are actually tracking it. If you would like, I can get you a copy of the report where they are doing it in conjunction with the assessments and testing program that they have implemented, and I can get you a specific report where they are tracking it. The Maryland Business Round Table has been trying to track the impact of that, and I will be happy to get you a copy of that report.

But there is evidence to demonstrate that where all the things come together, where you have got the use of technology aligned to the curriculum, and the teachers trained in it, that it does have a positive impact and is able to sort of really drive the standards faster. But I can certainly get you a copy of that report.

Ms. WILSON. I would very much like to see that.

Mr. DOMENECH. Let me also add, if I may, that when you mention achievement, the question here is, are you talking about scores on a standardized paper-and-pencil, multiple-choice test, or are you talking about higher-order thinking? And probably the issue is it refers to standardized tests, is questionable as to whether technology truly affects increases in test scores. But there is no question but that when you are dealing with higher-order thinking skills, that technology is having a big impact. To the extent that it is being used in research, it is being used in the development of writing skills. For example, in our school system, we are now offering online, at the high school level, a Web-based course on creative writing where students from all 24 of our high schools are able to participate in a way that truly enhances the way creative writing was taught in a traditional classroom.

So, the issue of achievement, it is having a significant impact on achievement, but I don't think we have the evidence to say the same thing about whether scores are increasing on standardized tests.

Ms. WILSON. Standardized tests are one thing that is important, but achievement is really more how you define it rather than—I am not thinking inside a box here. But I do know—and maybe this leads to my follow-on question here, which is—and I was very interested to hear about your program with some of our science centers, our science museums, in a way, hands-on museums and things—because it is that higher-order thinking and solving of problems that is one of the advantages of technology, whether it is

Freddy Fish or Sim Park, and the ability to make decisions and see the consequences of those decisions, as opposed to drill-and-kill things that just happen to be on a CD Rom instead of on a piece of paper. But there is also something about the way children learn and the way adults learn and the way the Internet isn't oriented frankly toward adults rather than children, that is something I think we need to get over.

I mean, we sit here and we learn from each other in this way. My children—prepare for boarding—they are going to be arriving here at 4 o'clock this afternoon—would find this completely meaningless because they learn in a different way. And playing with magnets and feeling static electricity raise the hair on your head and wondering what is it that makes this water pour if I tip it just a little more, is a child-like thing and something that is much more difficult to do on a computer, even though we have gone beyond reading to seeing and now to hearing on the computer, and even the interaction and the feedback, but there is still more to be able to make technology help a child learn. And so I would encourage you in your efforts.

I thank you for all the wonderful work that you have done, thank you for Animal Planet and some other things, to help bring the world to children who often are very, very far from a science museum on the East Coast, but still would like to hear what a dinosaur that looks like Snuffalopogus really might have sounded like because a scientist modeled it somewhere.

So thank you all very much for your work.

Mr. UPTON. I thank the gentlelady, and my sense is that members are staying on the House floor, and we have this series of votes that are going to start. I just want to say, to sum things up, I appreciate all of your testimony, your hard work in getting things done. And I know the folks that you answer to will be most proud of your presentation today, as they probably helped write it, but it really was a compliment to you and your organization as you help us along this road. Again, we are all on the same side here. Even though these are Republicans over here, and these are Democrats over there, we are all on the same side, we want the best for our kids and for the future workers of this country, and it is great to see so many different activities, whether it be after-school activities or those who need it at home. I am sorry, I can rail on my friend and colleague from the UP that he wasn't here, Bart Stupak, he would have liked our analogy, but for him, he does have a very rural district, stretching out. I think it is the second largest district east of the Mississippi. And for him, whether it be classroom technology or health care needs, all those different things, his district will reap tremendous benefits based on what happens in this subcommittee and committee and the Congress in the next couple of years. I know his interest is well-grounded in this issue as well.

Again, we appreciate your thoughts and comments. In addition to the members that put their statements into the record, those members that are at other subcommittees may have additional questions. I know for a fact that some do, and we will get those to you in writing, if you could respond at an early point in your process so that we can complete the record on this, but we thank you for what you do, and we wish you well in the days ahead, and

we look forward, certainly, as a Congress, to making your job a lot easier and complement your efforts to-date. Thank you. This hearing is adjourned.

[Whereupon, at 12:55 p.m., the subcommittee was adjourned.]

[Additional material submitted for the record follows:]

PREPARED STATEMENT OF ADVANCED TELCOM GROUP, INC.

Advanced TelCom Group, Inc. (ATG) is a facilities-based competitive local exchange carrier that provides voice and data services to medium and small business in smaller towns and communities. ATG currently operates in Washington, Oregon, California, Nevada, Connecticut, New York, Maryland and Virginia.

Since its inception, ATG has recognized its obligation as a Corporate citizen, to support education for underprivileged youth in the communities it serves. ATG works closely with schools, government, and private organizations to bring its resources and communications expertise to these organizations to create, support, and promote programs that educate, and otherwise assist our youth, especially those at risk.In every community where ATG provides telecommunications products and services, it actively participates in the communities—and its employees serve on Boards of various local associations and groups, mentoring and volunteering their free time.

On a national level, ATG is a partner of PowerUp—an organization that brings computer knowledge to underprivileged youths through computer learning centers and curriculum under the leadership of Secretary of State Colin Powell's Digital Divide organization, and of the Case Foundation. ATG provides and donates the high speed Internet access for PowerUp centers located in Oregon, Washington, and Connecticut. ATG has been being instrumental in linking PowerUp with other organizations and municipalities with similar goals in youth education, such as the Institute of Student Achievement in Westchester County, New York, and with the cities of San Rafael, California and Tacoma, Washington.

In Northern Virginia, ATG has joined with Fairfax County and the Case Foundation in their Computer Learning Center Youth Education Partnership to help fulfill their plan to create 20 learning centers in Fairfax County.

In Santa Rosa, California, ATG has collaborated with two corporate partners to raise over $200,000 in funds and in-kind donations for Sonoma State University to receive a grant from the federally funded GearUp program to promote education at the Cook Elementary School and Elsie Allen High School—both schools located in economically disadvantaged communities.

ATG is also the sole sponsor of education programs such as "telecommunications career pathways," computer technology intern and mentoring programs, and the adoption of a high school classroom by providing computer equipment, software, and high-speed connectivity.

In Westchester County, New York, ATG supports a program to provide computer learning to thousands of underprivileged youths under the leadership of County Executive Art Spano.

ATG supports, with sponsorships, many organization serving at-risk youths and their families, such as the Domas Foundation in Stamford, Connecticut, the Sagewind Group in Reno, Nevada, and Family Building Blocks in Salem, Oregon.

These efforts, and others like them, are only a part of ATG's commitment to be involved in our communities and to assist these organizations with financial support, services, and expertise in marketing and fund raising activities.

ATG's goal is to contribute to today's youth and give back to the communities we serve.

PREPARED STATEMENT OF DAVID C. RUBERG, CHAIRMAN, PRESIDENT & CEO, INTERMEDIA COMMUNICATIONS INC.

Mr. Chairman, members of the Committee, my name is David C. Ruberg. I am Chairman, President & CEO for Intermedia Communications Inc., a competitive local exchange carrier (CLEC) headquartered in Tampa, Florida, and operating primarily in the Eastern part of the United States. On behalf of Intermedia, I respectfully submit this written testimony for inclusion in the record of this proceeding.

Intermedia Communications (Nasdaq:ICIX) offers broadband data, high-speed Internet access, and advanced network and voice services to business and government customers in major markets. It is among the largest independent CLECs in the country, the nation's fourth largest frame-relay provider, a leading systems inte-

gration provider, and the nation's largest provider of multi-tenant services. Intermedia is also a majority owner of Digex, a leading provider of managed Web and application hosting services for some of the world's most significant companies that rely on the Internet as a critical business tool.

Intermedia is also a member of the Association for Local Telecommunications Services, known as ALTS. ALTS is the national trade association representing facilities-based competitors for local telecommunications services. ALTS represents approximately 100 CLECs, most of whom began providing competitive telecommunications services after the passage of the 1996 Telecommunications Act.

Mr. Chairman, you have held this hearing to address the issue of technology and education, and how various government and private sector programs have been successful in integrating technology into school curricula and classrooms throughout America. Access to technology in schools has always been a top philanthropic priority for Intermedia. Our company's basic philosophy is centered on the premise that in order for our company to grow and prosper, we must have an educated workforce from which to draw employees. Also as our company prospers, it is our responsibility to share that prosperity in local communities we serve and within local communities where we may not have a presence, but have resources and relationships to share.

In 1996, Intermedia chose to lead Florida's efforts to bring technology to every child through a national project called "NetDay" (www.netday.org). NetDay is a 501(c)(3) non-profit corporation whose mission is to seamlessly integrate technology into education and learning, both inside and outside the classroom. To achieve this goal, NetDay's mission is guided by six objectives aimed at increasing the penetration of technology in America's schools:

- Schools need the appropriate wiring infrastructure to access the Internet;
- Classrooms need access to connections with rich educational digital content;
- Teachers need the ability to integrate technology and instruction;
- Students need the opportunities to take advantage of technology;
- Businesses need to have a workforce that is technology literate; and
- Communities need the benefits of a technology-rich education for all.

In Florida, Intermedia had an even larger vision. Our goal was to create a comprehensive high-technology learning environment for all Floridians—whatever the platform, whatever the needs and wherever the facility. The plans included fiber and wireless solutions, computers, software, teacher training, and mentoring programs for students. Intermedia did not limit NetDay in Florida to just K-12 students in public schools, but it opened the program to include after-school programs, community learning centers, adult programs, distance-learning programs and private schools.

For Intermedia, NetDay is about connecting Americans of all ages to their futures. That is why we believe community technology centers are so important. These centers provide computers and access to the Internet access to grandparents and children alike. They enable people from all walks of life to be active participants in technology.

A center may be as elaborate as the Hillsborough Education Technology Center in Tampa, Florida offering state of the art facilities, libraries, teacher training facilities, a small business incubator and community out reach programs; or it could be a single room in a city-owned building like the one in Gadsden County. Regardless of size or stature, Intermedia believes that we must all do our part to enable even our neediest areas with the means to secure access to technology.

Intermedia committed to lead Florida's efforts for NetDay on July 22, 1996. Within three months, more than $9 million was raised and more than 1,500 schools were wired utilizing more than 20,000 volunteers. In 1997, our estimates showed that 60% of jobs in Florida would require computer literacy by the year 2000, yet it was estimated that only 20% of our students would be computer literate. So we adjusted the program's mission to put an emphasis on students' computer skills. To ensure that the program would be efficiently managed, Intermedia loaned out senior executives to coordinate the statewide effort. Over the last 5 years, we have continued a high level of dedication to the program that we initiated in 1996. Both NetDay96-Florida and NetDay2000-Florida have been recognized as two of the most successful efforts in the country.

Intermedia's ongoing support for NetDay activities reaches beyond our service areas. We have helped with more than 2,500 NetDay events around the country. Most recently, this February Intermedia donated as part of NetDay, 250 computers to the Boys and Girls Clubs, Big Brothers-Big Sisters organization, and the "Take Stock in Children" mentoring initiative in the Pinellas County Schools. Each computer was a Pentium or higher, with Microsoft ME OS and Internet content software and we're distributed by Intermedia employees and technicians.

One of the unanticipated "ripple effects" of NetDay in Florida has been an ongoing network of volunteers. These volunteers may have initially come for a "day of wiring", but found they could continue to contribute throughout the year in many more ways, including mentoring students and teachers in computer skills, sharing life experiences and relating valuable work-place skills. This resource has helped NetDay far exceed its initial goals.

By partnering together for NetDay, private industry, communities, educational institutions and government has been able to coordinate, educate and deliver preset goals in an expedited and timely manner. Mobilizing the shared and unique resources of all the required sectors has greatly contributed to the singular success of NetDay in Florida. It is Intermedia's belief that the involvement of private industry was a leading catalyst to the success of the program in Florida. I have attached to this testimony letters of support and endorsement from State and county leaders throughout Florida whose communities were positively affected by NetDay activities since 1996. They are a testimony of what businesses and government can do working together to bring technology to everyone in America.

I thank the Committee for the opportunity to submit this written testimony.

PREPARED STATEMENT OF WINSTAR

We would like to thank the Subcommittee for the opportunity to submit for the record, information on Winstar's efforts in education.

WINSTAR FOR EDUCATION

Winstar is committed to using its telecommunications technology for educationally and socially profound interactive projects such as the Training Cafe, The Virtual Wall and Teach Vietnam that are available free of charge for people around the world.

Winstar also uses its broadband fixed telecommunications to create virtual communities in both Washington D.C. and New York City to fulfill our mission of bringing people together in extraordinary interactive ways using our broadband infrastructure.

PROGRAMS

Winstar continues to be committed to education and communities, and is continuously seeking ways to harness our technology to assist communities in learning and sharing knowledge and experiences. Winstar programs include:

LATTICE

Winstar's LATTICE program *(Leveraging Advanced Telecommunications Technologies to Improve Community Environments, uses* advanced wireless technology to provide basic telecommunication services (telephone, Internet and cable) to people in low income, high-cost communities. (High cost, in this instance, refers to the cost of installing traditional telecommunications services.)

Our hope is that LATTICE will serve as a model for a nationwide virtual community of lifelong learners that eliminates the ″digital divide″ in inner city communities by building job skills and spurring economic, social and educational growth.

Winstar provides Internet services, on-site program management, and Internet technology using the Training Cafe in the following locations in a low-income community in Washington, D.C.:

- Tyler House *(urban housing development)*
- Walker Jones Elementary School
- Sibley Plaza *(senior citizens residence)*

The result is the creation of a virtual learning and earning community originating in a low-income housing development and expanding throughout the community.

The collaboration, which makes up the virtual learning community includes the owner of the property, the residents, the school district, not-for-profit organizations, private companies, local colleges and others to leverage technology to the benefit of children and their families.

The uniqueness of this project lies in the wireless connection and in the diversity of the community participation. Because of the technology, the residents have the opportunity not only to learn job skills, but to telecommute to those jobs as well. LATTICE exemplifies community collaboration, bridging the distances between home, school and work.

Training Cafe

The Training Cafe is a free interactive online learning site that provides educators with technical skills they can use in both their professional and personal lives. Training Cafe's multimedia modules combine interactive instruction with extensive hands-on practice.

This interactive web-based training supports the new International Society for Technology Education (ISTE) National Education Technology Standards for Teachers.

Training Café offers the Internet Technology series, free of charge, as of Fall 2000:

- Internet Technology Series—17 interactive modules covering a wide variety of Internet topics, and designed to assist teachers in bringing technology into the classroom.

Each module is interactive and takes about 45-60 minutes to complete. All modules are structured as described below. Users can select which parts of the lesson they want to work on, in their own time frame.

- Instruction—Module instructional content is presented as interactive multimedia with hands-on exercises.
- BrainCheck ™—Users test their knowledge of each module's content by completing the quiz in the module's BrainCheck with immediate feedback on each question. Users have the option of exiting a quiz to review subject material, and may re-take the quiz.
- Resources—Each module includes a Glossary, module-specific Resources on the Web, and Inside/Outside the Classroom suggestions for using the information presented in the module.
- K-12 Lesson Plans—Each module includes one or more lesson plans that have been specifically designed to integrate module concepts into classroom curriculum.

The Virtual Wall

The Virtual Wall is a digital, interactive legacy memorializing the 58,220 men and women who gave their lives in Vietnam. Developed through a partnership between Winstar and the *Vietnam Veterans Memorial Fund,* the original site launch was announced by Vice President Gore during a White House ceremony on Veteran's Day, November 10, 1999.

This web site allows visitors to upload text, audio or photo remembrances; participate in chat sessions with noted historians and journalists; and post information about upcoming reunions.

The Virtual Wall is for families and friends of veterans who lost their lives in Vietnam, students who come to learn about the Vietnam War, and for all visitors from around the world.

We are always looking to for ways to make *The Virtual Wall* an even more personal experience. On May 30, 2000, a new version of the site was launched, and offers many new features:

- A monthly guest column
- A monthly chat session with an expert on Vietnam
- Over 12,000 prepared reports that can be downloaded
- The opportunity to create and download custom reports
- Special sections for newly-added remembrances
- A daily update honoring soldiers, seamen, airmen and Marines on the anniversary of their death in Vietnam.

Teach Vietnam

Teach Vietnam is the cornerstone of *Echoes From the Wall,* which was produced under the leadership of the *Vietnam Veterans Memorial Fund.*

Presenting history, learning and leadership through the lens of the Vietnam War Era, *Echoes From the Wall* provides invaluable lessons about this divisive period, while also presenting innovative exercises and useful tools designed to heighten every high school student's sense of responsibility, leadership, and global understanding. The *Echoes From The Wall* curriculum package was distributed free of charge to all 26,000 public and private high schools in the United States. The complete 156-page teachers' guide and other materials from the curriculum package are available for educators to download via www.teachvietnam.org.

Teach Vietnam features a database of government and military documents and an expanding archive of photographs, audio files, video clips and newspaper articles about key figures and important events from 1954 through 1975.

NYBOE Project

The Winstar for Education's *New York Board of Education Pilot Program* provides fixed wireless broadband Internet service, Winstar for Education professional development training software and technology and curriculum integration assistance for five New York City Public High Schools for a period of one year.

The high schools receive guidance in integrating technology such as the Training Cafe into the classroom and curriculum. Also, they receive a network where they can collaborate with other schools, and WFE Internet and professional development tools.

This program successfully integrates Internet technology and software into the classroom while enhancing curriculum and minimizing distraction. It provides an ideal environment where numerous classrooms from five different schools can network with one another to create an on-line community, share information, participate in communal projects, and create lasting relationships.

The program invites Winstar employees to participate and contribute their time and expertise as:

- guest speakers
- online mentors
- volunteers in the classroom

Monster Exchange

The Monster Exchange is a program where elementary and middle school students and classrooms around the world work collaboratively on technology-based language arts projects The program is structured as described below:

- Classrooms select another classroom with whom to partner in the Monster program.
- Each classroom is split into groups that then design original monster pictures.
- The original monster design is then described using learned writing skills and the descriptive writing process.
- The description is written knowing that the audience will be another student trying to draw the same monster from reading the description.
- The partnered classes then exchange their descriptions via e-mail and the Internet.
- The students are then challenged to use reading comprehension skills to read the descriptions and translate them into a monster picture as close to the original picture as possible, without looking at the original and only using the exchanged written description.
- The written descriptions, original monster pictures, and redrawn monster pictures are scanned and uploaded to the World Wide Web using the browser based Monster Gallery Builder.
- The Monster Galleries are then published on the Internet.

TECHNOLOGY TRENDS

Technology is impacting not only the way we live in a digital economy, but the face of education itself. In 1996, President Clinton first introduced the Technology Literacy Challenge, whose components include the Internet, high-quality software resources and teacher development.

The 1996 "Does it Compute? The Relationship Between Educational Technology and Student Achievement in Mathematics" report from the Educational Testing Service (ETS), taken from the 1996 National Assessment of Educational Progress (NAEP), suggests that "... when computers are used to perform certain tasks, namely applying higher order concepts, and when teachers are proficient enough in computer use to direct students toward productive uses more generally, computers do seem to be associated with significant gains in mathematics achievement, as well as an improved social environment in the school."

With the advent of the Technology Literacy Challenge and the Telecommunications Act of 1996, monies have become available for schools to start building the infrastructure that would bring technology into the classroom. However, even with an infrastructure and equipment, an April 2000 National Center for Education Statistics Survey "Teacher Use of Computers and the Internet in Publics Schools showed that 33% of public school teachers feel well prepared or very well prepared to begin using computers and the Internet.

To sufficiently prepare our students for adult citizenship in the Information Age, computer-rated technology must become a tool that students and teachers use routinely as part of their everyday lives. The ISTE has established technology standards that include technological literacy for the effective use of informational tech-

nology in education. These standards work as a benchmark to guide the instruction to foster student achievement.

In order to bring our teachers up to date in computer and Internet skills as quickly as possible, teachers need to have easily accessible learning programs that address multiple learning styles. Winstar and Macromedia have addressed this need by offering the Training Cafe free of charge to educators. Comprised of a series of interactive Web-based training modules, the Training Cafe offers "anytime, anywhere" learning by allowing teachers to work at their convenience and at their own pace to acquire technology skills to be used in the classroom.

Co-developed by Winstar for Education and Macromedia, the Training Cafe focuses on delivering a professional development platform that acknowledges the biggest challenge facing our educational system. It is not simply access to new technologies, but intelligent use of those technologies to achieve educational goals. As the demand grows, the trend will be to see the growth of broadband capacity.

ACCESS AND EQUITY

Now that a considerable portion of today's business, communications and research takes place on the Internet, access to computers and networks may be as important as access to traditional telephone services.

In a 1999 survey conducted by the National Center for Education Statistics (U.S. Department of Education, "...teachers were asked the degree to which they used computers or the Internet to prepare for and manage their classes. Thirty-nine (39) percent of public school teachers with access to computers or the Internet in their classroom or elsewhere indicated they used computers or the Internet a lot to create instructional materials, and 34 percent reported using computers a lot for administrative recordkeeping. Less than 10 percent of teachers reported using computers or the Internet to access model lesson plans or to access research and best practices."

"The Digital Divide" between certain groups of Americans has increased between 1994 and 1997 so that there is now an even greater disparity in penetration levels among some groups," stated the NTIA in its 1998 report "Falling through the Net II: New Data on the Digital Divide." There is a widening gap, for example, between those at the upper and lower income levels.

While funding has been made available for infrastructure and equipment, there is a lack of funding for professional development. To assist teachers in meeting the ISTE technology standards, Winstar offers the Training Cafe free of charge to educators. Winstar's mission is to remove friction from small-to-medium-sized businesses; Winstar has gone a step further and is now taking the friction out of education through the use of our broadband fixed wireless services. Winstar is committed to helping children around the world function in a digital, frictionless age, and realizes that the most effective way to reach this goal is by providing professional development tools to the educational gatekeepers—the teachers.

It is our hope that we will serve as an example to other companies for bringing their knowledge to our future—our students.

TECHNOLOGY COST

Winstar realizes the challenges of limited funding that face educators, and is pleased to offer the Training Cafe free of charge. By providing a technology foundation to teachers, the Training Cafe is the first step toward incorporating technology into everyday life.

TEACHER TRAINING AND SUPPORT

Dynamic professional development ensures that educators are kept up-to-date on the latest methods of improving student learning. Ongoing staff development is critical to improving education through reforms such as the introduction of educational standards. It is important to note that effective professional development must be embedded into the everyday life of teachers, utilizing opportunities for continuous growth. The ability to access and utilize technology in the classroom plays a significant role for developing life long learners.

A school district's accountability for training teachers in technology is becoming more and more a requirement. Teachers need ongoing exposure to technology in order to integrate technology successfully into the classroom. A 1999 report from The National Center for Education found that "Teachers with more professional development in the use of computers and the Internet over the last 3 years were more likely to assign students various types of work involving computers or the Internet. For example, teachers with more than 32 hours of professional development were more likely to assign problem solving (41 percent) than were teachers with 0 hours (14 percent) or those with 1 to 8 hours (24 percent), graphical presentations (31

compared with 10 and 16 percent for the same groups), and demonstrations or simulations (29 compared with 8 and 13 percent for the same groups)."

Funding for professional development, however, remains a challenge. With their new skills, acquired free of charge, from the Training Cafe, teachers will be secure in their ability to prepare students to live and work in the digital age and will know how to empower students to employ higher-level thinking skills in approaching problems and tackling the demands of the 21st century workplace.

Winstar offers training and support to teachers through another of its programs, *Teach Vietnam.* Teach Vietnam is a progressive curriculum for teenagers which stimulates the imagination using critical thinking exercises and cooperative learning strategies.

STANDARDS AND ASSESSMENT

The Training Cafe not only offers valuable technology training to teachers but also meets academic standards and provides assessment tools for self-evaluation at each step.

Academic standards assist schools and districts with the ability to set high expectations for student achievement, provide a basis for student and teacher accountability, promote educational equality for all learners, develop effective curricula and instructional strategies, allocate more resources, and create professional development programs to improve instruction. State education departments have developed standards for teachers and students to instill a level of accountability.

The Training Cafe meets two (2) of the ISTE standards:

- Basic Computer/Technology Operations and Concepts
- Personal and Professional Use of Technology

One of the many pedagogical features of the Training Cafe is the ability to provide consistent training for all teachers. The content of the Training Cafe was developed by educators and supports the ISTE National Education Technology Standards for Teachers. Training Cafe includes 17 modules covering such Internet topics as browsers, e-mail, and Web searches. Each module takes 45-60 minutes to complete and includes hands-on practice in a simulated web environment, Internet-based teacher resources, and self-assessment quizzes.

E-Rate Program

Winstar is proud to make available our broadband technology to participate in the E-Rate program by bringing the Internet into the classrooms of those who are our future - our students. Winstar is committed to providing the technology tools necessary to prepare students for the new digital economy, and currently provides Internet access to schools and school districts across the country.

SUMMARY

Educational reform must serve the goal not only to prepare every student to compete in the global digital economy, but also to think in the global digital community. New jobs will be created everyday to fulfill the needs of this ever-changing digital community. It is the task of educators to facilitate a learning environment that will assist with producing citizens that can compete in the global digital economy of the 21st Century. The Internet is a tool to transform a classroom into a virtual community that links to resources and people from around the world. Our hope is that using skills acquired through the Training Café, teachers will incorporate technology into the classroom as a part of everyday curricula.

Winstar's Web-based educational and social programs provide the tools that educators, students, and communities need to move themselves into the 21st Century. Winstar is honored to bring programs such as the Training Café into the classroom to ensure the success of our future—our children—in the digital world.

ABOUT WINSTAR

Winstar is a leading broadband services company. The company is rapidly building one of the world's most widely available, end-to-end broadband networks. Winstar makes this network important and useful to businesses by providing a comprehensive set of high-quality, digital-age broadband services. These services include high-speed Internet and data, Web hosting and design, phone services, Web-based applications, e-commerce, professional services and Office.com®, A Service From Winstar, the top-ranked online business service for small and medium-sized businesses.

For more information, we invite you to visit www.winstar.com and www.win4edu.com.