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FEDERAL COMMUNICATIONS COMMISSION

NATIONAL BROADBAND PLAN WORKSHOP

EDUCATION

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 1    PARTICIPANTS:

 2    Panel 1 - a View on Innovation, Research and
      Development
 3
      STEVE MIDGLEY, Moderator
 4    Director Education

 5    JIM SHELTON
      Assistant Deputy Secretary for Innovation
 6    US Department of Education

 7    JOEL SMITH
      Vice Provost and CIO, Carnegie Mellon University
 8
      KUMAR GARG
 9    Policy Analyst, Office of Science and Technology
      Policy
10
      CARLOS KIRJNER
11    Senior Advisor to the Chairman

12    KRISTEN KANE
      Director National Purposes
13
      Panel 2 - Viewpoints from Media and Society
14
      STEVE MIDGLEY, Moderator
15    Director Education

16    SUSAN ZELMAN
      Vice President, Corporation for Public
17    Broadcasting

18    TODD HITCHCOCK
      Vice President, Pearson Learning
19
      DAVID JOHNSON
20    Senior Resident Fellow, Center for Democracy and
      Technology
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 1    PARTICIPANTS (CONT'D):

 2    Panel 3: The Future of E-rate

 3    REGINA BROWN, Moderator
      Wireline Competition Bureau
 4
      SHERYL ABSHIRE
 5    Chief Technology Officer of the Calcasieu Parish
      School System, Lake Charles, Louisiana
 6
      TOM GREAVES
 7    Chairman, The Greaves Group Carrie Lowe, Director,
      Program on Networks for the Office of Information
 8    Technology Policy, American Library Association

 9    CHRIS LEHMANN
      Principal, Science Leadership Academy,
10    Philadelphia, Pennsylvania

11    JAMES BACHTELL
      Wireline Competition Bureau
12
      CARA VOTH
13    Wireline Competition Bureau

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1   P R O C E E D I N G S

2   (1:06 p.m.)

3   MS. KANE: Good afternoon. Welcome to

4   this afternoon's session.

5   Before I begin, I'd like to say that

6   sign language interpreters are available for this

7   meeting, and if you need any of those services,

8   please make yourself known and we'll get those to

9   you very quickly. Thank you.

10   It is such a pleasure to welcome you

11   here to this education workshop this afternoon.

12   This topic, the Intersection of Education and

13   Technology, is one that is near and dear to the

14   heart of the FCC, which, as you know, has played

15   such a forward-thinking role in establishing and

16   implementing E-Rate over the years, and also to

17   mine, personally. So it's a real pleasure and

18   we're thrilled to see so many of you here and to

19   have so many others joining online.

20   Before we get started, I'd like to give

21   a brief context to the afternoon. As you may

22   know, this workshop is one of about 25 that the

    1   FCC has hosted -- is hosting this month in support

    2   of the development of the National Broadband Plan,

    3   which is due to Congress in about 181 days. And

    4   we are working furiously on that, and a

    5   significant component of that plan will be

    6   something we're calling National Purposes.

    7   And that is essentially addressing

    8   fundamental questions about the ways in which

    9   broadband infrastructure and applications can

   10   further national priorities.

   11   The statute calling for this plan listed

   12   about 15 different areas for us to focus on, and

   13   we've organized those topics into 6 working

   14   groups: Education, job training and workforce

   15   development, energy and the environment,

   16   government operations, health care, economic

   17   opportunity, and public safety.

   18   I'm really pleased to introduce you to

   19   Steve Midgley, who's to my left, who's leading up

   20   our efforts on the team with regard to education.

   21   Steve comes to the FCC with a huge amount of

   22   expertise in technology and education.

1   He's been an advisor to the California

2   Department of Education for several years, and has

3   also advised many school districts across the

4   country in his role of grants manager for the

5   Stupski Foundation. He's also an entrepreneur

6   himself, having been on the founding team of what

7   is now a publicly-traded real estate -- a

8   commercial real estate company called LoopNet.

9   So, he brings to this work a great deal

10   of insight on both innovation and the actual

11   practical needs of large systems when it comes to

12   technology. So we're so thrilled to have him.

13   He's put together a great workshop, we're

14   delighted that you all are here.

15   I also want to acknowledge and thank

16   Gina Spade, who leads up the FCC's E-Rate work,

17   who is not here right now, but has played a

18   tremendous role behind the scenes in putting all

19   this together.

20   So with that, I would ask you to please

21   silence your cell phones, and look forward to the

22   insights of all of our panelists, who we are

1   grateful for joining us today. And we'll turn it

2   over to you, Steve.

3   MR. MIDGLEY: Thank you, Kristen. Yeah.

4   So, welcome. And I'm just really looking forward

5   to this panel event. It's been quite a bit of

6   work to put it together and a lot of effort by a

7   lot of different individuals inside and outside

8   the FCC.

9   In this plan, we're going to be

10   developing a national strategy for the purposes of

11   broadband for education. And that will, of

12   course, include E-Rate and the elements there.

13   But I just wanted to identify some of the things

14   that we're thinking about here with regard to

15   finding exemplars.

16   People are already doing the

17   forward-thinking work, finding the best theories

18   as to how to advance that work into the 21st

19   century, finding ways in which government can

20   support and foster that work, and really

21   developing data research and evidence to support

22   the practice as we go forward in there in that

1   area. So, we can flip to the next slide.

2   And so, to accomplish that today, to set

3   the context for the next 180 days as we develop

4   this plan, we -- I feel we've really got some of

5   the best thinkers from fields across society:

6   From government, policy, science, research, the

7   legal community, broadcasters, publishers,

8   educators, and the business community. And this

9   would be incomplete without including the public

10   and the public discourse with regards to

11   education. And just about everyone in society in

12   America has a vision for what education should

13   look like and how technology can play a role. And

14   so I wanted to recognize that we have participants

15   watching on Second Life thanks to some really hard

16   work by a volunteer organization called Global

17   Kids, who has graciously sponsored and supported

18   that work on their own time.

19   We're also on Twitter at U.S. Broadband

20   4 Ed -- the number 4 -- so if you're online and

21   you want to ask questions, you can Twitter us your

22   questions there. We also have on this product

1   called IdeaScale, a site called U.S.

2   Broadband4ed.IdeaScale.com, where people are

3   posting their questions, moderating each other's

4   questions, asking questions of each other, and

5   developing the best ideas that will influence this

6   plan.

7   And I want to say that it's not just the

8   experts in the field, the recognized experts who

9   are going to drive this plan. It's the public,

10   and anyone who is interested in the plan is

11   welcome to participate in all of these ways.

12   And for the audience in person here, we

13   have cards that are available that you can write

14   your questions on and they'll be collected, and

15   we'll moderate those and serve to ask those

16   questions to the panelists as well.

17   And so with that, I want to introduce

18   the FCC panelists who will be participating in the

19   panel forums today. Kristen Kane, who just spoke,

20   is the director of National Purposes for the

21   National Broadband Task Force at the FCC. She is

22   responsible for directing and coordinating work

1   across the wide array of fields that she just

2   identified.

3   Carlos Kirjner, to my left, is the

4   senior broadband advisor to the chairman of the

5   FCC. And Dr. Kirjner will end his broad

6   international expertise in the business,

7   economics, and operations of the

8   telecommunications industry to the Federal

9   Communication Commission's development of the

10   National Broadband Plan. And he is responsible

11   for developing and identifying the core strategic

12   elements of the plan as a whole.

13   So, with that, those panelists, along

14   with myself, will be asking questions or

15   moderating questions as they come from all the

16   various sources that we just identified.

17   And so with that, I'm going to introduce

18   our first speaker. And I'm just extremely pleased

19   that he's been able to make the time to join us,

20   Jim Shelton, he's the assistant deputy secretary

21   for Innovation and Improvement. And he's

22   currently managing a portfolio that includes most

1   of the Departments of Education's competitive

2   teacher quality, school choice, and learning

3   technology programs, which are all housed within

4   the Office of Innovation and Improvement.

5   So, thank you, Jim, for being here. And

6   I'll look forward to your comments.

7   MR. SHELTON: Great. Thank you for

8   letting me be here today. Thanks for those of you

9   who are going to spend the time to listen.

10   I want to spend my brief time talking

11   trying to lay a frame for how we think about the

12   opportunity from broad scale innovation. Not

13   great ideas, not just inventions. Real innovation

14   that goes to broad adoption that goes to scale

15   impact improving the lives of our children and the

16   role that broadband and technology in particular

17   can play in that.

18   But I think first and foremost, it's

19   important for us to realize that the goal here is

20   to improve outcomes. That the goal here is to

21   actually frame what is it that we need to have

22   educationally, and then think about what is the

1   role then that technology and, in particular,

2   improved access in broadband can play in that.

3   So let's lay the landscape. We all know

4   the landscape of the challenges. We don't

5   graduate a third of our kids. And if you're

6   talking about low income or kids of color, you're

7   losing 50 percent of them before they even

8   graduate. We know that, in fact, many of them are

9   graduating, but not graduating college-ready.

10   And, in fact, they've never had the opportunity to

11   graduate college-ready.

12   So you've got kids who have gone through

13   school for years and years, never having had the

14   opportunity to take the courses that would have

15   allowed them to be prepared when they entered

16   college. They don't have equitable distribution

17   of high-quality teachers. We oftentimes don't

18   have the data to tell us even which teachers are

19   the ones that are most effective.

20   We don't have high-quality content, a

21   lot of the standards and assessments. We don't

22   have methodologies at scale for turning around our

1   failing schools, and we know that there are

2   schools -- I use D.C. as an example. When I was

3   in high school here in D.C., the schools that are

4   now -- were in the paper this weekend for their

5   turnaround strategies -- in this last weekend.

6   They were bad when I was in high school.

7   So, the reality is that we have a set of

8   perennial challenges that we know that we have to

9   solve. And the question is, how do we go about

10   solving them?

11   Well, first I want to talk about two

12   different kinds of solutions that we're proposing

13   into space from the Department of Education.

14   We've laid out a broad framework which emphasizes

15   four things: High-quality standards and

16   assessments; high-quality data systems that not

17   only can be used for the purposes of

18   accountability, but all of the other purposes, the

19   transparency, the performance management, the

20   improved practice of both students and teachers;

21   continuous improvement; and, ultimately,

22   innovation, human capital.

1   How do you actually identify and then

2   get to every student, especially the ones that

3   need it, high-quality teachers and leaders and

4   then turning around those lowest- performing

5   schools? There are two things in particular that

6   I want to talk about today that I think that we

7   here can help with.

8   First is data. And I laid out this

9   frame. We need to start thinking about data and

10   the power that it has to transform education in a

11   very different way.

12   The power is both -- is through

13   transparency. We have many constituencies that

14   don't understand or know what exactly is going on

15   in their schools. They don't know whether it's

16   high-quality or low-quality. They don't know

17   whether a student has a good teacher or a not good

18   teacher. Our leaders in those schools don't know

19   whether the programs that they have work or don't.

20   We have to create the systems to provide a

21   different level of transparency around all of

22   those things.

1   Accountability, we've done a pretty good

2   job of putting in place data systems. The problem

3   is that we actually haven't put in place the

4   systems that allowed the metrics that are actually

5   most informative to work. If you say that the

6   quality question of a school is not how many

7   students here know how much, but how much have you

8   taught each student here, most of our data systems

9   are not able to provide that. And it's something

10   that actually requires a kind of a platform that

11   can actually move at pace in order to actually

12   answer the questions.

13   Third, improve practice and performance

14   management. How do you take the information that

15   you have on a real-time basis, get feedback on how

16   you're doing, and then use that to figure out what

17   to do next? It is how humans in every endeavor

18   figure out how to improve. And yet, we fail to

19   figure out how to provide that capacity to our

20   students and our teachers and our leaders in our

21   schools. They get back assessment data the year

22   after the students take the assessments. In what

1   circumstance do we expect high performance to

2   emerge from getting feedback four months after the

3   effect?

4   And then, continuous improvement and

5   innovation. Almost every commercial sector during

6   the '70s, '80s, and '90s moved to a world where

7   they could collect massive amounts of data to be

8   able to look for patterns to understand which

9   things were working, which things weren't, and

10   iterate on them very quickly to make improvements

11   in the process. It is that continuous improvement

12   process that led to most of the breakthroughs that

13   we've had over the last several decades.

14   Every once in a while, these really

15   brand new ideas just streak in from nowhere. But

16   most of the time, it comes from studying a problem

17   hard, understanding what the patterns and

18   opportunities are, and pursuing them.

19   We don't have the data systems in place

20   to support that. We don't have the

21   instrumentation attached to most of the programs

22   that we offer in order to actually capture that

1   information and provide it in any kind of -- and

2   push it into any kind of analytical platform. And

3   the analytical platforms that we have are

4   inadequate. That's one whole side of the equation

5   that we could actually make tremendous strides in

6   improving education if we could just fix the

7   problems and actually address some of the

8   opportunities that we have around data.

9   But then there's the whole instructional

10   side of this equation. And I want to attack that

11   and raise several questions in a number of areas.

12   Access. How do we get the best possible

13   instruction and pedagogical approaches in front of

14   the students who may be isolated because of

15   geography; they live in a rural place? Because of

16   economics they live in a school that's low-income

17   and doesn't have the resources to have the kind of

18   courses that they want to have. How do we provide

19   access much more broadly to high-quality

20   instructional opportunities for students?

21   A few years back, public television had

22   an innovation in the space brought on by a group

1   affiliated with the Sesame Group. All right.

2   That transformed the way that lots of people

3   thought about providing broad access to

4   educational opportunity. Since then, we've

5   evolved. The Corporation for Public Broadcasting

6   has evolved and PBS -- I see Susan Zelman here --

7   to think about multiple media platforms and how

8   they actually integrate. So, television combined

9   with Internet combined with outreach actually can

10   have broader and deeper impact inside and outside

11   of classrooms. But we have no framework for

12   actually driving that kind of work on a consistent

13   and systemic basis and taking it to scale.

14   Those kinds of access -- strategies

15   around access need to get pushed to the next

16   level, and having broad scale and adoption and

17   availability of broadband can enable them.

18   The second thing, though, is -- beyond

19   access is this question of personalization. How

20   do we capitalize on really, really very clear

21   information about the specific needs and interests

22   of the students that we're trying to teach? How

1   do you address their needs by being able to not

2   only identify that need, but match it to the

3   specific resource that's going to be most helpful

4   to them? And how do you get the kind of

5   engagement that it takes to get continued and

6   applied effort by actually finding the right

7   resource framed in the right way so that it

8   actually interests them and engages them?

9   That is a problem that technology can

10   solve. In every other sector, especially for

11   commercial interests, we figure this out. I know

12   that somewhere behind every purchase I make

13   online, there's some engine back there figuring

14   out what's the next thing they ought to show me so

15   that I have a high likelihood of buying that, too.

16   Sorry. Oh, you're in trouble. They

17   just started my clock over.

18   SPEAKER: Yeah.

19   SPEAKER: Ten more minutes, you're good.

20   MR. SHELTON: I use this example often.

21   Why is it that I can have a genius function to

22   find the best music that I like to hear, but not

1   have a genius function for the right instructional

2   program to help me learn?

3   That is a solvable problem. We use it

4   in other sectors all the time. The technology is

5   available, the know- how is there, especially if

6   we pull it all together. And yet, we fail to do

7   it because we haven't marshaled the resources and

8   the will to get it done.

9   That, to me, sounds like a tragedy. But

10   I see it as the biggest opportunity. These are

11   problems that we actually know how to solve.

12   Let me move quickly, then, to the third

13   area, improved instruction. A lot -- we're

14   actually going to hear from some of the experts in

15   the field about the power of online learning and

16   the power of actually using technology. And what

17   the field is telling us is that, in fact, there is

18   power in these instructional resources being

19   online. But there is even more power on blended

20   opportunities. Augmentation of human capability

21   with technology is actually -- as we find with

22   pilots and others -- not only a robust solution,

1   perhaps the best possible solution.

2   But we actually don't think about that

3   when it comes to teachers. How does a teacher

4   with 30 students in the classroom, with 5 or 6

5   different levels of current performance, with 15

6   different cultural and ethnic backgrounds,

7   multiple languages as to home language -- at home,

8   how does that teacher, barring interest, figure

9   out a way to reach all those students in the

10   classroom just in her head or his head?

11   There've got to be tools to help our

12   teachers understand how to reach each student.

13   Improved instruction, enhancing the capabilities

14   of our teachers, has to be a way for us to

15   leverage technology.

16   Helping them access the best teachers in

17   the world on a particular topic -- why can't I go

18   online to say, who's the best teacher in the world

19   at teaching the concept of multiplying fractions?

20   And watch a video of it, take notes on it, and,

21   frankly, mimic it until I've mastered enough to do

22   it myself with my own art? That is the way that

1   this should work, but it doesn't.

2   Two other things that technology can

3   help us with" collaboration, participatory problem

4   solving. We all ask these questions, and it seems

5   I get these questions over and over again as I got

6   it as a private funder and I got it -- I get it

7   now in my current role. What works in this area?

8   Who's the best at it? How do I get them here?

9   Those are all questions that, when

10   thrown out to a broad community, you can get a

11   full set of answers. Some with evidence, some

12   without. But then you can more quickly start to

13   ascertain how you actually move forward by having

14   access to a lot of minds and then engage them in

15   the process of refining the answer, like we're

16   going to do with IdeaScale here today.

17   The last one that we have to be thinking

18   about is system productivity. The reality is we

19   have a tremendous opportunity to transform

20   education because of the amount of recovery

21   dollars that are going to the system: $100

22   billion are going to flow into the system that

1   were unanticipated. But the reality is they're

2   going to run out at some point. And at that point

3   we'll figure out that, in fact, education revenues

4   are a lagging indicator of economic recovery

5   because of the way our financial systems work.

6   So, most school systems three to five

7   years from now are going to find themselves with

8   less resources than they have today. And our

9   expectations for what they have to produce are not

10   going to have gone down, they're going to have

11   gone up. So, we're going to be effectively asking

12   them to do more with less unless something very

13   dramatic happens and we realize a commitment to

14   education that we haven't done for decades. I

15   reserve judgment on that.

16   Therefore, the only way I would submit

17   that we are going to get there is by really

18   thinking through new and different ways to educate

19   children that have both higher impact and lower

20   cost; that take advantage of the opportunities of

21   productivity that often in most other sectors have

22   come through technology.

1   So, I know I've gone way over my 10

2 minutes because I've used up half of the new

3 clock, too. But I wanted to lay a frame that I

4 thought we could all join in on, and I look

5 forward to your questions.

6   MR. MIDGLEY: That's very helpful, thank

7 you, Jim. Fascinating. And I will look forward

8 to the question session there. So, we're doing

9 something a little bit unusual in that we are

10 taking not only live testimony in this event, but

11 we are also taking asynchronous testimony,

12 testimony that's been pre-submitted, pre-recorded

13 from various parties who have reached out to

14 participate, but can't be here in person.

15   So, recognizing that this is a forum on

16 broadband and education, it doesn't seem like we

17 should just be limiting this to the people who can

18 be in D.C. at a particular time and place.

19   So, with that, we're going to attempt

20 this, at least. We're going to play some -- right

21 now, one video submitted from Consortium on School

22 Networking, very kindly contributed this piece,

1   which I think follows from Jim's points very well

2   in terms of reflecting on where the kids are with

3   technology, the students who we're trying to reach

4   and who, in many ways, are -- have moved past us

5   and we need to catch up.

6   (Video played)

7   SPEAKER: Technology is just so

8   convenient, regardless of what medium you're using

9   it for, like music production, film production,

10   sound production, writing. I mean, even writing.

11   Writing and reading have been taken over by

12   technology.

13   SPEAKER: (inaudible)

14   SPEAKER: As far as a laptop goes, it's

15   a bare necessity. I can't live without that.

16   SPEAKER: My phone is like almost like

17   my third hand. I take it with me everywhere.

18   It's like, even when I don't bring a purse my

19   phone is the only thing I bring.

20   SPEAKER: I've had a Nintendo 64, Sega

21   Dreamcast, Gameboy, (inaudible) a PSP, a Game

22   Cube, and (inaudible) X-Boxes.

1   SPEAKER: (inaudible) every single day

2   of my life (inaudible).

3   SPEAKER: (inaudible).

4   SPEAKER: (inaudible) when I go to math.

5   (inaudible) it's something I find very important

6   to me. (inaudible) and so I follow him on Twitter.

7   SPEAKER: On a scale of 1 to 10, I am a

8   9-1/2. I do it all the time. Absolutely all the

9   time, more so than (inaudible).

10   SPEAKER: (inaudible) I hate it, my

11   least favorite is when they say "u," like letter u

12   instead of y-o-u. Because, I mean, I'm a person.

13   I'm not a computer.

14   SPEAKER: If I didn't have computers, I

15   would play a lot of my hobbies that take up most

16   of my time (inaudible).

17   Because I have a -- I live Japanese.

18   And I do a lot of that through the Internet.

19   SPEAKER: I'm kind of (inaudible)

20   music-making. I just started some months ago, so

21   it's kind of a challenge for me so far. The

22   process I go through is really just trial and

1   error.

2   SPEAKER: With my MySpace I can set it

3   to, like, the colors that I want to, the music

4   that I want. Yeah, it's an extension of being who

5   I am as a person.

6   SPEAKER: I like so that I (inaudible)

7   one of those types of people who like to make

8   (inaudible). Like, well, this is one of the

9   websites I created. It's called (inaudible). You

10   can, like, upload your own (inaudible).

11   MR. MIDGLEY: Okay, we apologize for the

12   sound difficulties there. So, we know there are

13   going to be issues with technology in every

14   innovation. And this is ours. Let's hope that's

15   the only one. We'll keep trying with some other

16   videos down the road. And I really want to thank

17   Kosen for submitting that. And we will put that

18   up on the web so you can watch it with a proper

19   sound system at your own location. It's a -- I

20   really found that to be quite moving.

21   So, I encourage you to look for it on

22   our website. So, I want to introduce our next

1   speaker in person. Live, with a correct sound

2   system. Dr. Joel Smith, he's the vice provost and

3   chief information officer of Carnegie Mellon

4   University. And he also directs the Office of

5   Technology for Education. He is currently a

6   principle investigator in charge of the Open

7   Learning Initiative, where Dr. Smith and his

8   colleagues are doing some fascinating research

9   advancing the state-of-the-art in the science of

10   learning.

11   Thank you.

12   MR. SMITH: Thank you very much. I, and

13   my colleagues who I represent, appreciate the

14   opportunity to participate in the discussion.

15   It's an important one.

16   I must say I could not have asked Jim to

17   set a better framework because what I'm going to

18   be reporting to you on is a project that has

19   attempted to do many of the things that he said we

20   need to do. And we now have results to report on.

21   So, I bring you data. Go on to the next slide,

22   please.

1   The Open Learning Initiative was started

2   about seven years ago at Carnegie Mellon. The

3   objective -- and it was funded largely by the

4   William and Flora Hewlett Foundation. The

5   objective was to try to create 12 web-based online

6   courses that were demonstrably as effective as

7   face- to-face instruction. And I emphasize

8   "demonstrably."

9   Unlike many other open educational

10   resources, these are courses that were designed --

11   are designed to be the complete enactment of

12   instruction online. They are not just course

13   materials. Although, again, as Jim suggested,

14   what we have learned is, the most powerful way to

15   use them is in a blended or, as we call it, hybrid

16   mode. With instruction, I'll say more about that

17   later. Next slide, please.

18   This is perhaps the most important

19   slide. Because the Open Learning Initiative is

20   not technology. What it is is a set of design and

21   evaluation principles. And these are the most

22   fundamental. One, learning sciences have come

1   light years in the last 30 years. Cognitive

2   science, psychology, human computer interaction,

3   computational thinking have all taught us a

4   tremendous amount in the last 30 years about how

5   students learn. We use those principles to design

6   the courses. That is key. It is rare.

7   Secondly, course creation is not done by

8   an individual. We've taken it out of the cottage

9   industry realm and put it in the form of a team of

10   individuals who have a set of expertises essential

11   to create effective online instruction, working

12   together.

13   Third, the virtual learning environments

14   are instrumented in the back end at the

15   transactional learning level so that you can know

16   what a student is learning and is not learning.

17   And that that information can be fed to the

18   faculty members so they don't walk into the

19   classroom blind about what they need to deal with

20   in the classroom.

21   Lastly, an entire set of rich feedback

22   loops are used on a continuously developed course,

1   so that you get continuous improvement. Next

2   slide, please.

3   Translating scientific results from the

4   learning sciences into actual instruction is a

5   very, very difficult thing. When we think about

6   what we ask faculty to do -- and these courses are

7   focused on postsecondary education, so I'll

8   largely be talking about that -- when we -- what

9   we asked faculty to do by way of being content

10   experts and great teachers and administrators and

11   advisors, it is a difficult task to learn the

12   material from the learning sciences and integrate

13   that and use that to affect what you're creating

14   if you're just a single individual. So, it is

15   actually fairly rare for the results from the

16   learning sciences to get into classroom

17   instruction, online instruction, any kind of

18   instruction. But if such -- if efforts are made

19   by teams to create learning environments that can

20   be propagated across broadband networks and that

21   we can get data back across broadband networks,

22   then that changes the picture significantly. Next

1   slide, please.

2   I'll give you just two very quick

3   examples. We don't have time to actually show the

4   animations, unfortunately -- not the animations,

5   but the interactive tutors. But I'll give you an

6   idea of how we use learning principles --

7   principles from the learning sciences in the

8   design of these courses.

9   Here is a fundamental principle that has

10   been developed over the last years: Goal-directed

11   feedback and targeted practice enhance learning.

12   And that's immediate feedback to the student.

13   It's like having your own tutor. When you have an

14   individual tutor, you learn almost two standard

15   deviations better than you would if you didn't

16   have a tutor.

17   We have designed a series of mini tutors

18   that you will find throughout all of these

19   courses, where students can check whether they

20   have gained the knowledge that they think they are

21   gaining. And the tutors will adapt to a certain

22   degree to what they need, and then give them a new

1   problem. It will scaffold them in getting through

2   problems, remind them of key principles, and then

3   give them a new problem to see if they've really

4   gotten it. So, they can work through this as they

5   would with a human tutor. Next slide.

6   Another great example is -- from the

7   learning sciences is the realization that

8   meaningful engagement -- that is not just homework

9   problems that are out, just math problems, if you

10   will. Something where you can connect it to

11   solving a real world problem creates what we call

12   -- what is called robust learning. Robust

13   learning is learning that lasts.

14   Perhaps the best -- one of the best

15   examples from the Open Learning Initiative courses

16   is from the chemistry course in which the

17   chemistry faculty member realized that chemistry

18   homework is largely doing algebra, and that's not

19   what chemists do. So, we created a virtual

20   chemistry laboratory not to replace wet

21   laboratories, but because homework problems then

22   become meaningful engagements in real -- the real

1   kind of work that chemists do. Next slide,

2   please.

3   So, I'm giving you some examples of

4   feedback that students are getting. Perhaps the

5   most important feedback we're working on now is

6   giving feedback to faculty who are using these

7   materials, say, as an alternative to a textbook.

8   Next slide, please. Here's the ideal.

9   And here's what we actually have been doing.

10   Think of the student doing the homework for a

11   class, right? Of course, the night before. And

12   as the student is working in one of these Open

13   Learning Initiative virtual learning environments,

14   it is recording at the transactional level what

15   the student is doing. Not keystrokes, but we have

16   -- and this is the difficult part. What we've

17   tried to do -- what we are doing is designing an

18   understanding of what does a student need to do in

19   order to acquire certain concepts. What are the

20   markers of them acquiring the concept?

21   So here the student does the lesson at

22   night. The Open Learning Initiative technology is

1   recording what the student is doing, and then --

2   next slide, please -- the instructor prepares for

3   class. The instructor logs into the Open Learning

4   Initiative system and says what's the class

5   getting and what's the class not getting. In this

6   case, the professor sees they're not getting

7   concept A, okay? He or she may see that they are

8   getting concept B and C. So, when the professor

9   walks into class -- next slide, please -- the next

10   morning, he or she is going to concentrate on

11   concept A.

12   We have already seen this happen. Next

13   slide. A good example is what we've been able to

14   do with the OLI statistics course -- the Open

15   Learning Initiative statistics course. We ran it

16   in a blended mode or, as we call it, hybrid mode

17   in which the faculty member got exactly this kind

18   of feedback. What we have learned is this allows

19   us to teach the regular freshman statistics course

20   in half a semester with half the number of

21   in-person meetings, and that these students

22   perform significantly better on standardized tests

1   of statistics knowledge, increasing the knowledge

2   over that period of time, than did the students in

3   the face-to- face course.

4   And we have now replicated these results

5   on a much larger sample. So this looks like a

6   very real effect. In this blended mode, we can

7   increase productivity, in part because we're

8   giving that faculty member data. The faculty data

9   reported it was the best experience he ever had

10   teaching because he and the class walked in

11   knowing what they didn't know together, and they

12   knew that he knew it, and he knew that they knew

13   it. Next slide, please.

14   We've done many other studies. That was

15   part -- that has been part of the Open Learning

16   Initiative from the beginning. Rigorous

17   assessment. Just some of the other results. In a

18   community college, accelerated learning study in

19   statistics, the OLI sections covered 33 percent

20   more content and had a 13 percent learning gain

21   rather than a 2 percent learning gain with -- in

22   comparison to face-to-face courses.

1   In a large state university, where we

2   taught the OLI logic course, we had -- the course

3   had a 99 percent completion rate in comparison to

4   a 41 percent completion rate for the face-to-face

5   course. You can go to the OLI site, which is on

6   the last slide, and find all of the studies that

7   we have done. Next slide, please.

8   So, the key here is, gathering student

9   -- one of the keys to using broadband, using all

10   this connectivity is it gives us the opportunity

11   to create virtual learning environments in which

12   we can gather data about what is working and what

13   is not working, feed that back to instructors,

14   feed it back to course designers for the next

15   iteration, so we do get continuous improvement in

16   ways that we have not in the past. Next slide,

17   please.

18   This is one example of feeding data to

19   learning scientists. We're working with the

20   Pittsburg Sciences of Learning Center, which is

21   the University of Pittsburg and Carnegie Mellon

22   NSF Center that studies learning. And this is

1   just the kind of data that we were constantly

2   developing about whether a student is actually

3   acquiring a skill. The curve shows he or she is,

4   in this case. Next slide, please.

5   Hmm, that's interesting. Part of that

6   didn't show. And the part that shows is a quote

7   from Herbert Simon that says, "We will only

8   achieve improvement in education when we turn

9   teaching from a solo sport into a team activity."

10   And that is what we believe we have done. There's

11   the website and feel free to contact either me or

12   my colleague Candace Thille, who is the director.

13   Thank you.

14   MR. MIDGLEY: Thank you, Joel. That was

15   very impressive.

16   And it raises some really important

17   questions that Jim introduced within -- the issues

18   of innovation and education and we'll follow on

19   with, I think, very nicely with Kumar Garg to

20   address some of the issues with high-level policy

21   at the White House.

22   So, Kumar Garg is a policy analyst at

 1   the White House Office of Science and Technology

 2   Policy. And Mr. Garg's portfolio ranges over the

 3   intersections of education, science, and

 4   technology. His work includes federal STEM policy

 5   -- science, technology, education, and math --

 6   engineering and math, excuse me, as well as the

 7   broader education technology agenda, as well as

 8   the role of open government and innovation in the

 9   advancement of learning. And Mr. Garg works

10   closely with a number of federal agencies that

11   have educational agendas, including the Department

12   of Education.

13   So, thank you for being here.

14   MR. GARG: No, thank you. And thank you

15   again for having me. And, you know, I feel, you

16   know, excited to be on such an esteemed panel

17   where there's so much expertise at the table.

18   It seems Jim has -- and Joel have laid

19   out a lot of the challenges that sort of exist for

20   this technology. So, maybe I'll do the other

21   side, which is lots of the potential that exists

22   for the role of technology in being a fundamental

1   part of the reform strategy as we try to drive

2   learning.

3   You know, so just this morning, you

4   know, Secretary Duncan and Jim Shelton announced a

5   major new innovation fund, which has game-changing

6   potential precisely because it focuses on the

7   potential for looking at what's working and

8   scaling it up.

9   Now, I think that raises the question as

10   to why we're working so hard and why what the FCC

11   is doing is so important. And let me say that I

12   think it's critical that we get this right. And

13   why is it critical we get this right is, I'll

14   quote Carl Fursch and his quote that says,

15   "Whether we want to or not, we're preparing

16   students today for jobs that don't yet exist, to

17   use technologies that haven't yet been invented,

18   and to solve problems that we don't even know are

19   problems yet."

20   And that's no less true for the

21   workforce today. So the question is, how do we

22   learn effectively for tomorrow today? And that's

1   a big challenge, it's a big question. When we're

2   driving achievement, the question is, what are we

3   driving achievement for? And the potential, as

4   Jim laid out, is substantial. Because a child

5   today can sit down at a computer and increasingly

6   more and more access a whole -- a universe of

7   knowledge that was not available until very

8   recently. And that universe continues to grow.

9   Similarly, that child -- it doesn't

10   matter where that child sits down at that

11   computer, whether it's in the inner city or in a

12   rural town, they're accessing the similar world.

13   And, you know, the video that Steve sort of

14   highlighted, you know, I think raised a big

15   question, which is, young people today are power

16   consumers of communication technology. They are

17   power communicators and they use technology as

18   that and, you know, as do many people at this

19   table.

20   The question is, how do we use

21   technology -- how do we harness the potential for

22   technology as we do in communication to drive

1   learning? And I think there's a lot of recent

2   developments that are starting to showcase that

3   potential. And let me just throw out a couple of

4   examples.

5   So, one idea that, you know, as Joel was

6   highlighting, was the capacity for online

7   learning. And online learning has a number of

8   advantages for the current workforce. It can

9   allow Americans to balance the challenges of work

10   and family and continue to acquire skills at a

11   time and convenient place for them. And this is a

12   major priority for the president as we talk about

13   building the foundations for new prosperity.

14   Another example is the capacity for

15   online portals that can allow parents to become

16   more engaged in a child's education. And a number

17   of innovative school districts have started to

18   stand up these systems where a parent is about --

19   is able to follow, in real time, a child's

20   education, whether that's attendance data, whether

21   that's formative assessment data, and engage in

22   high-level collaborative communication with

1   teachers. Now, this can really enhance what we

2   think of as a modern day parent- teacher

3   conference. How do we empower parents to be

4   active consumers and participators in their

5   child's education? And then this community can

6   then become a community of practice, where

7   teachers and parents are co-partners in developing

8   the educational strategies for their children.

9   Another example, and, you know -- and

10   online learning dovetails with this, is open

11   educational resources, including those created by

12   the federal government. The federal government,

13   through it's many agencies, creates substantial

14   amounts of open educational resources. And the

15   capacity for students to effectively utilize those

16   materials, for parents and teachers to utilize

17   those materials, is a huge potential. And then

18   for the capacity -- and for that to be then

19   adapted and remixed to sort of extend the long

20   tail of learning that allows customized education.

21   Another example are the sort of advent

22   of digital tutors and the ability of online

1   courses and for instruction to engage in this

2   continuous path of learning, where personalized

3   instruction allows hints, such as student knows

4   what they're failing at and what they're

5   struggling at. It allows a cycle of rich feedback

6   for teachers, for course designers, and so forth.

7   And finally, I'll sort of throw out a

8   whole additional movement, which are game-changing

9   new formats that exist for learning, such as games

10   for learning, you know, which potentially have a

11   real potential to change what we consider learning

12   environments. So not only are we trying to make

13   learning more effective, but to embed learning

14   wherever students are. And I think this has a lot

15   of potential because you -- if one can engage and

16   embed learning in places which students already

17   find compelling and engaging, it can vastly expand

18   the attentive time on task that we're always

19   striving for in education.

20   Similarly, as Jim talked about, there's

21   a massive potential for collaborative learning.

22   And we know that in the gaming space, there is

1   lots of potential for collaborative action,

2   whether it's massive multi-player games or for

3   simulations which harness the ability for students

4   to interact with a flight simulator, with medical

5   professionals, or engage in what the president

6   talks about: Making students not just consumers,

7   but also producers. So the -- in Fab Labs and

8   learning by doing.

9   So, I'll say -- so that's sort of a

10   broad framework for lots of potential that's

11   coming -- that's occurring recently that sort of

12   showcases how we might be able to make -- embed

13   learning in everything we do.

14   Now, sort of why is what the FCC doing

15   in sort of building a broader framework for

16   broadband so important? Well, I think we've taken

17   a lot of major steps in the past six months, and I

18   think the FCC work builds on it. I mean, let me

19   first start with the fact that the president is --

20   strongly believes in the role of technology as a

21   fundamental driver of reform and as an innovation

22   platform.

1   You know, the president -- I don't know

2   if you remember this story, you know, used to use

3   Skype to read to his children on the campaign when

4   they were apart. You know, he gets the role of

5   technology in expanding the capacity for learning.

6   And he spoke about, you know, in

7   January, that we have to give our children a

8   chance to live out their dreams in a world that's

9   never been more competitive. And to do that we

10   have to equip our schools, our community colleges,

11   our public universities with 21st century

12   classrooms with labs and with libraries. And we

13   have to train our teachers and everybody that

14   surrounds a child's learning with a capacity to

15   embed that learning.

16   And in the past -- you know, in the past

17   six months, a lot of the building blocks for

18   building that 21st century education

19   infrastructure have begun to be placed through

20   broadbandUSA.gov, there's -- you know, there's a

21   substantial commitment that is being made through

22   the Recovery Act to expand the capacity for

1   schools, for universities, for libraries to have

2   high-speed access and to create the capacity for

3   broadband adoption and penetration in ways that

4   we've never seen before.

5   In addition, as Jim highlighted, the

6   Department of Education is -- has a substantial

7   leadership role in this effort through the largest

8   investment in education in our history that we're

9   making through the Recovery Act. And that

10   included not just outlays that could be used for

11   technology, but a specific $650 million that went

12   towards education technology and inventing

13   game-changing new technologies inside classrooms

14   for districts.

15   And finally, I'll mention that the

16   president just a month ago announced a historic

17   new commitment towards community colleges. And in

18   that commitment and building a new skills-based

19   infrastructure that builds out our economy, he

20   highlighted the need for the development of an

21   online skills laboratory, a place for continuous

22   learning that exists online such that those in

1   community colleges -- but then, anybody -- can

2   engage and harness the potential for online

3   learning for -- to engage in -- to learn more in

4   less time, to be in customized environments, and

5   then to partner with community colleges where

6   they're able to structure their learning around --

7   environments around what people are struggling

8   with and to build broader education frameworks.

9   So, I'll say what -- so in all these

10   efforts, you know, the FCC role and your role is

11   essential. Because without high-speed broadband,

12   none of this is possible. Whether it is the high

13   school administrator that wants to use cloud

14   computing to improve operational efficiencies,

15   whether it's the teacher that wants to use

16   cutting-edge media resources, or student that

17   wants to continue learning at home in the same

18   rich content that might be available at the

19   school, bandwidth is necessary.

20   And the FCC has always been at the

21   forefront of these efforts. They've continued to

22   use leadership that exists through the broadband

1   plan, but, you know, the FCC has a long history of

2   success and leadership in this area. One need

3   only look at E-Rate, which at its start --

4   connectivity to K-12 classrooms with less than 4

5   percent in 1994 and it has expanded 95 percent

6   today. So I think the FCC has been a leader and

7   continues to be a leader and we appreciate their

8   leadership in this area.

9   And I'll say that these workshops are a

10   critical component of building out this broadband

11   plan. There is a similar effort going on with the

12   National Education and Technology Plan, and they,

13   too, are soliciting feedback from the community.

14   And I think it's important that those who care

15   about this and want to harness the potential for

16   this are interacting with the many ways that we're

17   trying to build collaborative communities and get

18   community feedback.

19   And then, you know, I encourage you to

20   use the brainstorming tools that Steve highlighted

21   and that are being put up both at the National

22   Education Technology Plan and with the broadband

1   plan because, you know, these questions are hard

2   and your feedback is going to be essential.

3   I'll throw out just two sort of final

4   questions just to sort of think about.

5   For example, one question we're

6   struggling with -- and we would love feedback --

7   is, how do you best maximize the utility of the

8   substantial amount of open educational resources

9   that are created by the government? We are

10   creating these materials. How best can we use

11   these materials and place them in the hands of

12   teachers and students?

13   Similarly, in the aggregate more money

14   gets spent on R&D, for the breakfast that I child

15   eats than the education they consume when they get

16   to school. And we're starting to turn that

17   around. And the question I have for folks here

18   is, well, how do we build those new and improved

19   pathways for research and development so that

20   we're -- so that they're -- so that the market is

21   making those same kind of multimillion dollar

22   investments for games such as World of Warcraft as

1   they are making for a science and math game for 10

2   year olds? Thank you so much.

3   MR. MIDGLEY: Thank you, Kumar. This

4   mic has gone off. Oh, it's back on. Thank you.

5   That's very helpful. That's -- this

6   panel is going to remain here for 15 minutes to

7   receive questions. So, I think there are cards

8   going around -- or if you have already submitted

9   them or raise your hand if you're looking for a

10   card. Woman in the back there will provide you

11   with one.

12   And I'm going to start with a question

13   -- this forum is being broadcast both in Second

14   Life and via WebEx. And we have a question coming

15   in from WebEx that I'll read here to the

16   panelists, and then we'll begin taking questions

17   from the FCC panelists and from the audience here.

18   This question comes from Chris on WebEx.

19   How can we leverage broadband to do something

20   other than the predetermined outcomes and

21   predetermined answers, but rather help students

22   become thoughtful creators and consumers of ideas?

1   So, this may be one to Joel, if you want

2   to speak to that.

3   MR. SMITH: Well, I think Kumar

4   identified the key and that is that broadband is

5   an enabler. I mean, if you think about gathering

6   data, you know, in terms of students using it --

7   using materials, it's an enabler. How we do

8   something that's new and different as a

9   game-changer depends on the people creating the

10   content, the people creating the research, the

11   people delivering the data about what works and

12   what doesn't work, and how we feed that back in

13   for continuous improvement.

14   But at the same time, I'll say one more

15   thing about the enabler. If we don't enable the

16   community college student who has two hours at

17   home, you know, in the middle of the night to work

18   on courses, if we don't extend the capacity to the

19   last mile of broadband, if it's too expensive for

20   them, then they won't get the opportunity to use

21   what people create to deliver across that enabler.

22   MR. SHELTON: The one thing I want to

1   add is, there's two parts to this. One is, the

2   kind of increases in productivity that Joel talked

3   about, if you think about it -- you're teaching a

4   standardized course in half the time with a course

5   that usually had a failure rate of more than half.

6   Now, 99 percent passing it. So, just think about

7   that.

8   And then think about what that would

9   mean in terms of how much time students would have

10   to have other kinds of rich experiences, to figure

11   out how to apply that content knowledge that they

12   just acquired to things that they really care

13   about.

14   Think about the kind of educational

15   experiences you could actually create if you had

16   that kind of pass rate, in half the time. Those

17   are the kind of things that we need to think

18   differently about, about not just how we're

19   teaching these individual courses better, but what

20   kind of different experiences can we create

21   because we actually are doing it better.

22   MR. MIDGLEY: Thank you. Carlos, do you

1   have any questions you'd like to direct to the

2   panel?

3   MR. KIRJNER: We sometimes think about

4   the problem of broadband education in three

5   separate layers, one being the connectivity layer.

6   And I think, as you pointed out, we have had some

7   success there with the rate, at least for today.

8   You know, five years from now, we can have another

9   discussion of what are going to be the -- where

10   have to be -- we think about the application,

11   content creation layer. We do have challenges

12   there, as you point out.

13   We also pointed out that we do have

14   hope, right? We've seen a great example. And

15   then we have the education human processes layer,

16   which is -- seems to be the biggest challenge and

17   the biggest opportunities, right? You can have

18   all the technology in the world, if you don't

19   change the way students use it and teachers use

20   it, it's not effective. Right? I -- so, we

21   appreciate that.

22   Focusing for a moment on the lower layer

1   of connectivity. If you, today, had to design a

2   program to connect schools and libraries that

3   would be good for the next 10 years for this

4   nation, you know, (inaudible) the success we have

5   had, let's look forward for 10 years. And let's

6   assume that we will -- the technology will not be

7   an impediment to resolving any of the problems in

8   the two layers above it.

9   What would you do? What would you try

10   to enable?

11   MR. SHELTON: I mean, I'll start. I

12   tend to want to think about this in terms of

13   leverage. The reality is that there are

14   significant commercial interests that have a

15   desire to see PIPE get to these institutions,

16   largely because once they get there, they're in

17   the communities that they want to actually sell

18   to.

19   So, I think that the first condition of

20   the plan is that every possible way that we can

21   leverage the private dollars that want to come

22   into the sector, to actually reach the folks that

1   we want to reach, that ought to be principle one.

2   So, as opposed to thinking about first

3   spending and then hoping people follow? Think

4   about how do you subsidize, how do you create

5   enhancements, how do you create incentives for

6   folks to invest other private dollars that are

7   going to create a multiplier effect.

8   The second thing is that -- the second

9   principle is, where are people least likely to go?

10   That just is our governmental role. And so, rural

11   communities, those places that are hardest to

12   justify in normal economic models if you have a

13   business interest, they have to be a top

14   consideration.

15   The third is -- and I know you're

16   already doing this -- thinking very differently

17   about actually the resource of the spectrum

18   itself. And how will you actually provide that

19   and make it available to the education community

20   and to these other sectors that actually aren't

21   going to be able to bid for it so that, in fact,

22   they can create opportunities themselves either by

1   the uses that they make of the spectrum and/or

2   actually turning that spectrum over for sale,

3   again, to feed the kind of innovation and

4   development they want to do? Because I would

5   venture that with one year's lease on a small

6   amount of spectrum, you could create an entire

7   school's curriculum replicating the work that Joel

8   has done in Carnegie Mellon.

9   MR. GARG: And I'll just say that, you

10   know, what's changed in the past -- oh, what --

11   excuse me, sorry. What's changed in the past 10

12   years is what we think of the Internet. So, I --

13   when E-Rate started, we were -- a student was

14   pulling up web pages that were text-based. And

15   today, when we think of what Joel's talking about,

16   when we're talking about a form of hybrid

17   instruction that is continuous, that includes

18   video, that includes the ability to have a digital

19   tutor that's giving you feedback, there's somebody

20   on the other line, we -- you need a continuous

21   connection. The whole concept of connectivity

22   changes. So, I think that's a major change.

1   And so, what you think about

2   connectivity for a student, whether they're

3   sitting at a classroom computer, whether they're

4   home, the kind of robust learning models that

5   we're talking about now, it's not just pulling up

6   a single web page and reading down.

7   So, I think that's changed. And it

8   changes, then, how you think about what kind of

9   connectivity you need.

10   MR. SMITH: Just two adds with my CIO

11 hat on is, one, I think there's really an

12 opportunity to leverage the existing regional

13 educational and research networks. They have a

14 great deal of knowledge about their local

15 environments and the context varies from region to

16 region, and it's a place where you can gather --

17 and I know you do -- but it's a rich place to

18 partner and gather data.

19   And the second thing I'll say is, I

20 think really understanding, you know, provisioning

21 and how much provisioning is actually required. I

22 mean, there have been cases in the past in which

1   universities have over- provisioned. And looking

2   at the new technologies and how much bandwidth

3   will actually be required is an interesting

4   challenge. But I work at a university that now,

5   the wireless network is the dominant network.

6   Right? So.

7   MR. MIDGLEY: And that wireless network

8   is an unlicensed network, right? That has been

9   innovated on. So just to drop that in.

10   Kristen, would you like to ask a

11   question?

12   MS. KANE: Sure. I have another

13   question about specific roles the federal

14   government can play in stimulating innovation, not

15   just on the connectivity side, but also on the

16   application side.

17   And when you think about the K-12 sector

18   and how fragmented it is, particularly with regard

19   to demand for really innovative applications, is

20   there some role that we could contemplate for the

21   federal government in addressing, whether it's

22   standards or somehow aggregating demand for some

1   of the data applications that you all spoke to in

2   different ways?

3   MR. SHELTON: Yeah, I mean, I expect

4   each one of us would hit this one pretty hard. We

5   have a definite need for standards: Better

6   standards, standards of (inaudible), better data

7   definitions to allow for interoperability among

8   systems. That's whether you're talking about the

9   data management side or you're talking about the

10   instructional side.

11   We -- if we get to those standards,

12   we'll be able to actually innovate much more

13   quickly, leverage the resources -- the precious

14   resources we have much better.

15   The good news is, on the academic

16   content standards, we actually have a large number

17   of states kind of moving in the right direction,

18   where, in fact, we'll actually be able to target

19   our R&D dollars towards the same targets. So I

20   think that's going to help. But that's kind of

21   the first step along the way.

22   The second thing is we have successfully

1   increased innovation in a number of sectors

2   through tax incentives, subsidies, leverage that

3   we provide to the investors in that sector. So,

4   let me give you an example.

5   The SBIC used to give a 3-to-1 match to

6   the investments of venture capitalists to

7   stimulate the venture capital market. Why

8   wouldn't we actually have a program like that

9   specifically targeting investment in the education

10   sector or investment in clean energy or things

11   like that, in particular, those things that are

12   technologically -- driving technology?

13   MR. SMITH: So, as you could tell from

14   my presentation, you know, we don't believe that

15   we have it right. We never believe we have it

16   right. It has to be instrumented to see what's

17   working and what's not working and what works and

18   doesn't work in a different context. So my answer

19   is actually fairly simple. Preferential funding,

20   preferential treatment for those systems that

21   demonstrably show that they monitor effectively

22   and change and continuously improve.

     1   And if you don't -- if you -- whatever

     2   you're doing, if you can't do that, you can't

     3   continuously improve.

     4   And that is not something that in the

     5   past has been a central part of funding from the

     6   Education Department, from NSF. That assessment

     7   has always been kind of an afterthought. Maybe 5

     8   percent of your budget whereas we're talking about

     9   continuous assessment here.

    10   MR. GARG: So, I think this question is

    11   really important, partly because you're trying to

    12   do two things that sometimes seem contradictory,

    13   which is you're both trying to customize. So,

    14   it's a customization revolution where everybody's

    15   learning in a different environment but then

    16   you're also trying to aggregate. Because you want

    17   major investments where folks come together and

    18   actually spend a lot of money to create that

    19   game-changing game that engages the 10-year-old.

    20   That makes that new kind of learning object that

    21   drives learning in an area that we don't know.

    22   So I think you have to -- you want to

1   move in both those directions. And I think as Jim

2   was talking about, standards are an important way

3   to do that. So that somebody knows that if

4   they're creating towards a particular standard, a

5   learning object, they know that then a whole

6   series of folks would be able to consume it and

7   they're aligned to those.

8   So, I think it's a really important

9   question.

10   MR. MIDGLEY: That's very helpful.

11   Unfortunately, I think we're just out of time.

12   So, we don't have time to address some of the

13   other questions that came in now. But that was a

14   fascinating set of responses and thank you very

15   much for coming here to present your ideas and

16   represent your organizations.

17   So, with that, I want to thank Jim

18   Shelton, Joel Smith, and Kumar Garg for presenting

19   their testimony to the FCC.

20   (Recess)

21   MR. MIDGLEY: So, we're going to move on

22   to the second panel.

1   But before we do, we're going to try

2   another asynchronous testimony. This one, if

3   things go according to plan, will be from Jack

4   O'Connell, the state superintendent of Education

5   at the California Department of Ed.

6   And so we'll give that a try.

7   (Video played)

8   MR. O'CONNELL: I'm Jack O'Connell,

9   California state superintendent of Public

10   Instruction.

11   Today we live in a world that is

12   increasingly technology oriented. Now, as

13   California's state superintendent of public

14   instruction, I feel strongly that our K through 12

15   public education system must absolutely keep pace

16   with these advances in order to more effectively

17   prepare our children for the challenges of this

18   new world. California's technology backbone is a

19   critical element of this work.

20   Now, one way that we are working to

21   achieve this preparation is through our Brokers of

22   Expertise project. Brokers of Expertise will be a

 1   web-based knowledge management system that enables

 2   teachers to gather and to share effective

 3   practices, educational research that meets high

 4   standards, expertly cull the data for meaningful

 5   trends, and to develop workable strategies

 6   specific to implementing the research into

 7   California's extraordinarily diverse public

 8   schools.

 9   Now, this system will provide the

10   opportunity for thousands of outstanding educators

11   from every corner of California to share their

12   expertise and to learn of the latest innovations

13   from their colleagues throughout the state as well

14   as our world-class research community.

15   Brokers of Expertise will provide the

16   opportunity to combine, in a potentially

17   revolutionary way, the expertise and innovations

18   of California's technology community with our own

19   educational community as we prepare California's

20   next generation of citizens.

21   This is just one very important example

22   of ways in which technology and California's

1   high-speed network can, in fact, be used

2   effectively in the course of our children's

3   education. And as the world continues to change,

4   we must remain open to any and all other ways that

5   we can use technology in our schools.

6   The world of technology and information

7   is changing at a fast and rapid pace, faster than

8   ever before in our history. Our students are

9   digital natives and are riding this wave with

10   ease. Now educators and schools must find ways to

11   use technology to help students navigate the

12   increasingly competitive world and better prepare

13   for successful futures. The future of our state

14   and, indeed, our nation depend on it.

15   Thank you very much for the opportunity

16   to submit this testimony.

17   MR. MIDGLEY: All right, so we will

18   virtually thank Jack O'Connell for that testimony.

19   And we'll move on to our live panelists,

20   who I'm just really thrilled to have such a great,

21   great group here in this second panel, Viewpoints

22   from Media and Society.

1   So, I'll introduce our first panelist,

2   who's Susan Zelman. Dr. Susan Zelman is the

3   senior vice president for Education and Children's

4   Content at the Corporation for Public

5   Broadcasting. She develops and oversees the

6   vision, focus, and related strategies for CPB's

7   Education and Children's Content initiatives and

8   manages CPB's administration of the Department of

9   Education's Ready to Learn grant.

10   Prior to joining CPB, Dr. Zelman was the

11   superintendent of Public Instruction with the Ohio

12   Department of Education. And during that time,

13   she led the advance of Ohio's educational system

14   from a midrange ranking to 6th among all 50

15   states.

16   So, thank you, Susan, for being here.

17   We look forward to hearing what you have to say.

18   DR. ZELMAN: Well, I actually, of

19   course, come here from -- as -- in two capacities:

20   One as a former state chief school officer for 10

21   years, and now a senior vice president for

22   Education for the Corporation. And I've been at

1   the Corporation for nine months. And I really

2   have come to understand the tremendous opportunity

3   to increase learning outcomes for all children by

4   aligning public service media quality content to a

5   national and state education reform agenda.

6   You know, public service media has

7   stations all over the country, in both radio

8   stations and television stations. They are a

9   trusted source of information for their community.

10   Our mission is not only to enlighten and

11   entertain, but also to educate. Pat Harrison, our

12   CEO, likes to say public service media's DNA is

13   education.

14   We produce content online, on air, and

15   sponsor educational activities within the

16   community. Public service media, through

17   broadband, can be in every school in America.

18   Today I would like to describe how

19   public service media is developing an integrated

20   curriculum, professional development, and data

21   tool system that with broadband can support

22   educational reform in our country.

1   Next slide. Next slide. As Ohio's

2   state superintendent, I really worked very hard to

3   utilize four basic strategies, which are also the

4   goals of the current administration, to increase

5   student achievement in my state.

6   First, I set high standards for what we

7   wanted our students to know and be able to do.

8   And I worked very hard to align these standards

9   with new curriculum models and new assessment

10   systems. I developed an educator support system

11   to ensure that teachers were able to teach to

12   these standards and that teachers were in schools

13   that needed them most -- or high-quality teachers

14   were in schools that needed them the most.

15   I redesigned my databases, first by

16   linking our student performance database with our

17   teacher database. And as I was leaving, we were

18   trying to link our instructional management system

19   with our teacher and student database.

20   I also developed a series of tools for

21   both diagnostic and technical assistance purposes

22   to struggling schools.

1   I came to the Corporation for Public

2   Broadcasting because I believe the resources of 40

3   years of public broadcasting can have -- can

4   really be an educational force that can motivate

5   and engage teachers and students. It could help

6   transform an analog system of schools into a new,

7   flexible, agile digital learning system that can,

8   in fact, accelerate student achievement.

9   Next slide. The Obama Administration

10   has signaled that standards and assessments are a

11   high priority for state superintendents. Public

12   Broadcasting has 40 years of public media content

13   that can be brought into the classroom. For

14   example, we can imagine a system where digital

15   assets from such valued programs as Sesame Street,

16   Between the Lions, and The New Electric Company

17   can be incorporated into preschool reading

18   curricula and help struggling readers learn how to

19   read. Imagine how far we can move the needle if

20   broadband were in place to connect the content

21   that is research based and proven effective to

22   children, particularly those who need it the most

1   and who have been the least served.

2   We are digitizing our programs through a

3   program called American Archive. We're digitizing

4   materials on the Civil Rights Movement and World

5   War II.

6   We have funded PBS KIDS GO! broadband,

7   an integrated data video and gaming website for

8   children ages 6 to 12, which, if brought into the

9   classroom, could promote cognitive, emotional, and

10   social development.

11   We will be working with experts on

12   formative assessments to determine what students

13   already know and how they learn.

14   We can easily imagine, as broadband

15   becomes more pervasive, of having a national

16   digital media metadata system aligned to agreed

17   upon national standards that are linked to digital

18   learning objects such as video clips, audio clips,

19   interactive game simulations, pictures that engage

20   and motivate students. This will allow for

21   multiple representations of concepts for different

22   types of learners and the use of video objects to

1   customize student learning.

2   Next slide. The following slide shows

3   just a few examples of current online professional

4   development resources. These assets provide

5   teachers with online content in the form of

6   newspaper articles, magazines, professional

7   journals, encyclopedia, video clips, maps, charts,

8   graphs, games, and lesson plans. These resources

9   currently exist and are working as we speak to

10   integrate content with teacher training. Our goal

11   is with two clicks teachers will have access to

12   the content they need to customize individual

13   instruction and to access online professional

14   development through public broadcasting.

15   Next slide. We are working with the

16   Council of Chief State School Officers, CCSSO, to

17   develop a national platform to integrate digital

18   assets across 50 states -- state's data system.

19   We will be encouraging states to integrate their

20   student and teacher data systems with public media

21   digital content. The common platform can become a

22   place where both students and teachers get data to

1   evaluate, sort, and improve their learning. The

2   data system will support an educational Facebook

3   for teachers and students across the country as

4   broadband becomes more accessible. Teachers and

5   students would create their own pages of

6   information on their work. The network would

7   allow for the development of Brokers of Expertise

8   to build and share knowledge and experience.

9   Next slide. Next slide. Public service

10   media, together with a national broadband plan,

11   can put the pieces of this puzzle together. We

12   can bring high-quality digital content to all

13   schools, particularly those who have been

14   historically underserved. We can create a rapid

15   response system for struggling schools and

16   students. We can provide continuous feedback so

17   that students and teachers can take control over

18   their own learning. We can use the system to

19   create new metrics and measurements. We can

20   explore how teachers select content for what types

21   of students. We can explore how well students

22   master the content. We can explore what kinds of

1   digital learning objects need to be created for

2   what type of student.

3   And we can explore what types of

4   professional development strategies that teachers

5   use in order to teach the content, and what

6   professional development needs to be created in

7   the future.

8   In conclusion, public service media has

9   a long history of working with schools and

10   educators. We have been an integral part of the

11   public education system for 40 years.

12   As we digitize our trusted and valued

13   content, we look forward to being a valued partner

14   as education moves into this new digital age.

15   Thank you for the opportunity to be here

16   today, and I look forward to a lively discussion.

17   MR. MIDGLEY: Thank you, Susan. It's

18   great. So we're going to move on to the next

19   speaker, Todd Hitchcock. Mr. Hitchcock serves as

20   vice president for Pearson Learning Solutions,

21   where he's focused on helping educational partners

22   build and grow online programs in both K-12 and

 1   higher education. Mr. Hitchcock is an advocate

 2   for educational improvement through innovative

 3   technologies, and is currently on the board of

 4   directors for the International Association for

 5   K-12 Online Learning and the United States

 6   Distance Learning Association.

 7   Previously, Mr. Hitchcock has served as

 8   the vice president of Global Services for the

 9   Florida Virtual School, where he led a team that

10   provided solutions to numerous schools, districts,

11   states, and countries around the world.

12   Thank you for being here.

13   MR. HITCHCOCK: Wish I would have

14   submitted a shorter bio, I think. But thank you.

15   Yeah, I appreciate, first of all, on

16   behalf of Pearson, for inviting us here today.

17   It's interesting; I spend a lot of my

18   time with school districts and superintendents,

19   teachers, principals, and what still amazes me is

20   that many people see Pearson as a textbook

21   company. And they think -- when we start to talk

22   about some of the things that we do, they're quite

1   surprised because they continue to think of us as

2   a textbook company.

3   Can you just flip ahead to the next?

4   Thanks. One of the things that I think is really

5   important that I'm going to talk a little bit

6   about today is Pearson as a company and what we're

7   -- how we're seeing the future as opposed to where

8   we may have seen the past with regard to

9   textbooks.

10   And without sounding like a public

11   service announcement, I want to kind of take you

12   through a little bit of that. I'm not going to

13   take you through slides on this. But I thought it

14   was really important to share with you the things

15   that we're doing now and where we're going in the

16   future so you could see why broadband is so

17   critical to our strategy going forward as a

18   publisher and as an educational services company.

19   So one of the things that you're all

20   familiar with are the CDs that we actually deliver

21   and textbooks that we have for many years. For

22   the past X-number of years, customers have been

1   saying to us we need this content on the web. We

2   need you to make it web-enabled. And you need to

3   give it to us in that digital format.

4   And as we start to do that, we've had

5   challenges with some of the broadband that's

6   available to the school districts, to students at

7   home, and even the wide-area network capabilities

8   with inside the schools. So that's a really

9   critical factor for us when we start to deliver

10   those -- just that basic content that is a

11   supplemental to the textbook.

12   In addition to that, we have programs

13   such as enVisionMATH, middle grade science, our

14   online biology programs that really are focusing

15   on differentiated instruction, that are focused on

16   some of the things that the first panel talked

17   about with regard to personalization, providing

18   content in multiple formats to different types of

19   learners. So taking that off of digital and

20   putting it on the web, again, requires broadband.

21   We're doing some really interesting work

22   in latent semantic analysis software that allows

1   for students to write writing samples and then

2   actually have the technology to diagnose that and

3   provide feedback back to the students. Again,

4   online applications that require medium to high

5   bandwidth to be able to do that.

6   We have RTI Solutions, and we have

7   Credit Recovery Solutions, and NovaNET, and

8   SuccessMaker that we -- the -- we're being asked

9   by our partners to be able to make it available to

10   students at home and to -- and over the web.

11   We serve many of the districts

12   throughout the country with our student

13   information management systems: PowerSchool,

14   Chancery, SASSY. And teachers are demanding that

15   they be able to take those grade books home and be

16   able to work on some of those things at home, and

17   some of those administrative tasks that

18   administrators would like to do, as well. And,

19   again, that requires high bandwidth.

20   As a former technology officer for a

21   school district, one of the things that we used to

22   do was we would prioritize the bandwidth to

1   administrative traffic. We have to serve our

2   administrators first, and then our students. So,

3   really, even with limited bandwidth, (inaudible)

4   to a -- school districts. And as a former school

5   district employee, focused on the administration

6   first and not the students. So, increasing that

7   bandwidth to a point where it is available to both

8   for education, really, to be able to move the

9   needle on student performance is even, you know,

10   more important than some of the admin systems.

11   And the last piece that we have is

12   really with regard to our learning platforms. And

13   this is something that has -- it's really quite

14   interesting. Our higher ed group is growing

15   dramatically because of the work we're doing

16   online with our MyLabs and with our online

17   courses. We have platforms like Project Tapestry,

18   eCollege, Fronter. And they're setting a standard

19   for K-12 students, not just in readiness -- of

20   what the content that the student has to study,

21   but also the learning environment themselves.

22   If a student hasn't gone on to a higher

1   -- goes on to a higher institution and has never

2   taken an online course or an online supplement at

3   all, they're being disadvantaged because now

4   they're expected to learn in that way. And those

5   supports to teach them how to do that are not

6   currently in place. So we need to be able to

7   offer those at the K-12 level to ensure we are

8   making students ready not only for content, but

9   also for the mode in which they'll be learning in.

10   If you think of that holistically,

11   there's really two things that are really

12   important. One is, all those systems that I

13   mentioned, as we knit those all together, the

14   other thing that we're able to do that we could

15   not do with print textbook is we -- and, again,

16   the first panel talked a lot about this -- is that

17   we can harness that data. And we can take both

18   leading data and laggard data. We can provide the

19   school, the student, the parents with information

20   about that child at the start of the semester, or

21   during the semester, in order to try to change

22   performance on -- again, regardless to learning

1   style or where that child is. And so that --

2   having that -- all that information in a digital

3   format and being able to provide active data is

4   critical to really transforming education, and

5   that's something that we couldn't do with print.

6   So this -- the -- so that's what we do

7   now. The second thing that we now -- is that we

8   can't do that on a low bandwidth line either; it's

9   really important.

10   I'll share with you a story from a

11   recent conversation that I had with someone at one

12   of the Departments of Education. I won't mention

13   the state. But we were talking about all this,

14   and we were putting all these things together, and

15   we were talking about the types of solution that

16   they wanted. And the last thing they said, and,

17   oh, by the way, it's got to run over a 56K line.

18   And it was really interesting because

19   it's something that in order to take us to where

20   we want to go and to what the first panel we heard

21   this morning -- or, sorry, a few minutes ago -- is

22   we can't do that over a 56K line; broadband is

1   really critical.

2   Two other things, really quickly. If we

3   could -- I'm going to break all the PowerPoint

4   rules and show you the next slide that -- I pulled

5   this from an email from our CEO.

6   And I apologize; that's a bit of an eye

7   chart, so I'll read it. Peter Cohen wrote -- when

8   we were talking about this event, he sent an email

9   to me and I pulled it out. He's our CEO of our

10   curriculum (inaudible), "Broadband and persistent

11   access to the web is a must if we are to transform

12   education.

13   If schools are to embrace rich media

14   content and innovate to allow students to learn

15   anywhere, anytime, they must provide for enough

16   bandwidth to support video, audio, and live

17   instruction online."

18   Can you just click it one more time? A

19   couple of things worth highlighting there:

20   Access to the web, transform education,

21   and allow students to learn anywhere, anytime.

22   These are critical to our strategy as a company.

1   We're not also just looking at the sustaining type

2   of technology and sustaining education with an

3   agrarian calendar in which students -- that

4   anytime, anywhere, it really doesn't mean that a

5   student is going to study between 8:00 a.m. and

6   3:00 p.m. That's not anytime, anywhere. And it

7   doesn't mean that they're going to study between

8   September and June. It's really breaking down the

9   agrarian calendar.

10   And so in order to do that, we are

11   really focusing on the future of education of

12   online programs. And, again, in order to be able

13   to do that, broadband is critical.

14   The last thing I'll say before moving on

15   is we're working very closely with iNACOL and

16   Susan Patrick and the work that she's doing with

17   regard to policy for online learning. And we're

18   spending a large chunk of our time trying to

19   determine what the educational system will look

20   like in five years, and what are the things that

21   we should be doing in order to prepare for that.

22   And I'll say it one last time is that we know that

1   all these other things are traffic:

2   Policy, curriculum, instruction. But

3   the highway itself is the broadband, and we need

4   that in order to be able to get to our

5   destination.

6   MR. MIDGLEY: Thank you, Todd. Great

7   stuff. So we're going to move to our third

8   panelist, Dr. David Johnson. Dr. Johnson is the

9   senior resident fellow with the Center for

10   Democracy and Technology here in D.C. Before

11   recently joining CDT, Dr. Johnson was a visiting

12   professor at New York Law School for a period of

13   five years.

14   Mr. Johnson has been a sustained and

15   powerful contributor to the fields of law and

16   internet policy since the early days of the World

17   Wide Web. These contributions include a seminal

18   paper coauthored with David Post in 1996 entitled,

19   "Law and Borders: The Rise of Law in Cyberspace,"

20   which was awarded the 1997 McGannon Award.

21   So thank you, David, for being here.

22   DR. JOHNSON: Most of what I'm going to

1   talk about comes from the recent experience at New

2   York Law School. And in general law schools yield

3   to no one in their conservatism and their failure

4   to take advantage of technology. So if somebody

5   involved in legal education is here saying we need

6   broadband, it's really time to move on that front.

7   The favorite thing -- the best thing

8   I've ever read about education was written by Ron

9   Stout of Chicago-Kent, who was reciting an

10   incident in which he was observing his daughter

11   sitting in the lap of his mother, interacting with

12   a new, at the time, very exciting new form of

13   interactive book. And he was getting very excited

14   in explaining to a colleague of -- here's how

15   wonderful technology was in enhancing education.

16   And the colleague, who is a wise man in these

17   matters, said does the grandmother come with it?

18   Because it was clear that what was making the

19   experience exciting and creating a learning

20   opportunity for the child was that there was

21   someone there watching what they were doing,

22   encouraging them, and caring whether or not they

1   learned.

2   And so I think my first major message is

3   that whatever we do with broadband, and whatever

4   we do with content and data, we have to make sure

5   that the grandmother comes with it.

6   One way to do that is to think about how

7   to reengineer the class online. This is a

8   picture, not a very good one, of one of the

9   classes that we held in something we called State

10   of Play Academy, which was in a multiplayer online

11   world called There.com, which we chose at the time

12   because it was the only venue that supported both

13   text bubbles and voice.

14   And what we learned in this experience,

15   I think, is that online classes as opposed to

16   bringing broadband -- not as opposed to, but in

17   contrast to bringing broadband into a traditional

18   classroom, online classes have some significant

19   advantages, the most important of which is that

20   there are multiple channels of communication. You

21   can't quite see it there, but there's a microphone

22   that can be passed around, so there's a uniform

1   voice channel that everybody can hear.

2   But at the same time, every member of

3   the class can type in the text bubbles. And so

4   you can -- without interfering with anyone else,

5   so you can see what everyone in the class is

6   thinking all at once. And it gives the teacher,

7   if there is a teacher, the opportunity to see who

8   they should call on.

9   And, of course, you can use the online

10   environment to bring in external resources and so

11   forth.

12   You might think that you'd have trouble

13   assuring the attention of students in an online

14   class. We actually have trouble getting the

15   attention of students in real world classes

16   because they bring their computers in and so

17   forth. In this particular setting, if a student

18   were to click outside the window, the system

19   automatically puts goggles, green goggles, on

20   their avatar in such a way that you can tell if

21   they're not paying attention, and calling them

22   with the microphone if you want to.

1   The other major virtue of online

2   classes, which require broadband to bring people

3   together, of course, is that they can do it at any

4   given time. And what we've found is that because

5   you can ask someone to come and teach a class for

6   45 minutes or whatever, from wherever they are,

7   even though they're not a professional teacher,

8   and because you have the whole group of avatars

9   paying attention not just to the teacher but to

10   each other, you really can expand the curriculum,

11   if you want to call it that, the potential for the

12   number of different people who can become teachers

13   and who can effectively engage with students and

14   who can bring kinds of expertise into the

15   classroom that is not available from professional

16   teachers in lots of settings.

17   I think the implication of this

18   particular example is that we really have to

19   rethink the granularity of education. I've seen,

20   certainly in the law school curriculum, it doesn't

21   make any sense to have everything be a 14-week

22   class. It doesn't make any sense to have

1   everything have to fit into some broad,

2   textbook-based sized package. And a corollary of

3   that is we need better tools to allow people to

4   find and locate the available small-grain

5   educational experiences, both the students and

6   teachers who can find ways to contribute.

7   So -- next slide -- I guess the major

8   lessons we learned from that experiment in online

9   learning is that online classes are sometimes

10   better, anyone could be a teacher.

11   Another learning from -- idea from

12   distance education is that often you can't get a

13   critical mass of either teachers or students in a

14   niche subject matter in a given educational

15   institution. New York Law School has a mental

16   health-based program that works only because it

17   can leverage across multiple students in multiple

18   institutions. And so that's that major point.

19   The second major point I would make

20   about online education, and the role and the need

21   for broadband, is that students learn best and are

22   most motivated to learn when they need to know

1   whatever's being taught for purposes of

2   performing. The reason World of Warcraft works is

3   that you have to learn how to -- a lot of things:

4   How to work with a team, how to master certain

5   skills, how to communicate effectively in order to

6   bring down the dragon. And so whatever we do with

7   broadband, the most important thing, it seems to

8   me, is to reengineer the way we motivate students

9   by testing not based on how you can write an exam,

10   but whether you can perform a task. That opens up

11   the potential for innovation in lots of different

12   kinds of teaching because the established

13   institutions don't have a monopoly on what works

14   best to teach people how to perform a task.

15   The closest we came to that is what I'm

16   showing you now, which is a legal card game. This

17   was -- this kind of thing we've developed by

18   asking professors what their students seem to have

19   trouble with, and then trying to build some kind

20   of game that would require them to exercise their

21   mental model, if you will. In this case, playing

22   these cards onto the right slots to assert

1   appropriate defenses to particular elements of a

2   particular kind of standardized crime. I don't

3   have data, but I do have anecdotes. And I'd had

4   -- several law students told me that they stayed

5   up all night playing the game. And nobody has

6   ever told me they stayed up all night reading the

7   casebook.

8   And why it works, of course, is that you

9   get a score. You can play it again and again.

10   You can -- you know, it's fun. And, in fact,

11   there are serious work been -- has been done on

12   what fun is. And the good news is that fun is the

13   gradual mastery of a learning curve. So instead

14   of contrasting the idea of fun and education, we

15   have to make them synonymous with one another.

16   And so -- and I think online can do that

17   if we rethink the granularity of classes, if we

18   don't limit the participants in the creation of

19   these kinds of educational opportunities to

20   traditional institutions or even traditional

21   teachers. I would open up your wonderful

22   California system to non-teachers as well, as a

1   first step. And it's broadband that makes that

2   kind of experimentation possible.

3   It's all in.

4   MR. MIDGLEY: Thank you very much.

5   Yeah, just, really, all three of you, thank you

6   very much for providing those dimensions to this

7   issue. So we're going to open up again for

8   questions. So if you have, in the room,

9   questions, please find the people with cards and

10   feel free to submit them. She's right over there

11   now; just indicate. And to the online audience,

12   Twitter and WebEx channels are both open, so feel

13   free to submit questions that way.

14   I'll pass over to Carlos for the first

15   question.

16   MR. KIRJNER: I wanted to ask a question

17   about the means of delivery of content to a child

18   in K to 12. I think we know, at some level we

19   focus on two means of delivery today. One is the

20   textbook, and I think anyone who has taken a sixth

21   grader to school with a very large bag has seen

22   the problem -- one of the problems. The other

1   being that the books cannot be customized for the

2   classroom, to the kid. And, now, the content has

3   been created some time ago, right?

4   So the textbook is one means of

5   delivery. I think the other one we talk about is

6   the computer. It's online; it's the web. Are

7   there other means of delivery that they should be

8   thinking about? Are these the right devices? And

9   if there are other devices, what's the role of

10   government to make them happen?

11   DR. ZELMAN: Well, in our Ready to Learn

12   grant for preschoolers and children in early

13   grades, we've been experimenting with a variety of

14   different handheld devices. So, for example, even

15   in parent training, we Twitter parents and give

16   them really good information about how to interact

17   and talk to their children vis-à-vis the

18   telephone. We've also been using handheld devices

19   both as professional development tools to child

20   care providers and preschool teachers, which in

21   some sense gives them just in time professional

22   development and gives them little scenarios about

1   how kids are thinking about mathematics or a

2   reading concept.

3   And also we have online sort of

4   individual assessment -- reading assessment data,

5   which gives teachers immediate feedback once they

6   plug in that assessment data to the computer on,

7   therefore, how to individualize instruction for

8   students with regard to reading. And we've been

9   experimenting with those types of devices as part

10   of our Ready to Learn grant.

11   But that's just a very small example of

12   what is becoming out there.

13   MR. HITCHCOCK: Thank you. Two parts to

14   the question. The first one, I think, was with

15   regard to the modality of learning. And I think

16   the efficiency; I think I heard you say.

17   But one of the things I want to point to

18   is a study that a tax watch group -- tax watchdog

19   in Florida called Tax Watch did about a year and a

20   half ago on Florida Virtual School with regard to

21   the efficacy of full online learning for students

22   who are taking courses that are not in a physical

1   classroom. And I'd like to point your attention

2   to that one because it came back that it was as

3   good or better than a traditional system, from the

4   actual modality.

5   Where we anticipate it's going and where

6   superintendents are talking to us is how do we

7   make the school system more effective in the sense

8   of do we change the school day, do we make it

9   longer, do we shorten it and have a blended

10   environment in which students will study both

11   online and on ground. And what does that look

12   like and what are the tools that we need to make

13   that successful.

14   And so that's where the second part of

15   what do the devices need to look like. And we

16   spend a great deal of time looking at that. Is it

17   the Kindle? Everybody feels it's the Kindle. Is

18   it going to be the iPod or the iPhone? And a

19   couple things that are really important is to be

20   able to render the graphics, like you saw today in

21   some of the slides. It's very difficult to do

22   that on a monochrome type of device like a Kindle.

1   Or to be able to put an experience that we saw in

2   the gaming environment, that we're also building,

3   that Dr. Johnson showed, can you recreate that

4   full experience more than mini-games inside of a

5   little device?

6   So -- and then, also, is making those

7   devices available to students. Is it feasible to

8   be able to provide the cost of the web-based

9   services to those children?

10   So we look at all those. And we're

11   starting to look at -- more at the webbook, even

12   though we do have -- are focusing on those devices

13   that you mentioned. But the netbook is this next

14   generation device that really has the portability,

15   the flexibility, and the high-end computing

16   function, being able to do some of the things that

17   we've talked about here today.

18   DR. JOHNSON: I want to add that I want

19   to not only deliver the content, but the

20   grandmother's voice. And it turns out that you

21   can do that now if you combine an expert system in

22   the backend with a voice-enabled, Tellme kind of

 1   service. You can interview a student in a way

 2   that tests their performance. Have the voiced

 3   recording of what they say routed to the teacher,

 4   who can then click a button and send them a

 5   voicemail that encourages them or corrects what

 6   they've done. And we've -- I think that kind of

 7   delivery platform will become more important.

 8   MR. MIDGLEY: Thank you. I want to ask

 9   a question, myself, related to this sort of

10   ability to learn. We've gotten one question

11   online related to disabilities, and I want to

12   expand that to the full scope of digital literacy

13   and skills.

14   So if we want to run online learning and

15   there are students that are not presented with the

16   skills outside of school, and some students are,

17   then we have similar problems to the literacy gap

18   as students enter school; we have digital skills'

19   gaps, digital literacy gaps, as well.

20   And I wonder if you have thoughts on how

21   to create accessibility, both for disabled, in

22   that sense, as well as for students who are

1   missing skills that many of the mainstream kids

2   would take for granted.

3   MR. HITCHCOCK: Sure. So, the two-part

4   question. One is -- and I was fortunate to be

5   able to attend the earlier panel this morning on

6   the -- the disability panel. And there are

7   standards that -- the 508 compliance for providing

8   content and technology to disabled learners. And

9   what I heard this morning was not a surprise to

10   me, is that it's still not there yet. And I don't

11   think anybody would stand up and probably say that

12   is there.

13   But there are -- they are moving more

14   towards that, to be able to do some of the things,

15   not only the screen reading abilities and some of

16   the accessibility things that we were talking

17   about this morning, but also having some of the

18   voiceover IP technology that you were talking

19   about. We're starting to get there with some of

20   those pieces.

21   The second part of your question was

22   with regard to -- I was kind of putting

1   (inaudible) to leveling the learning. And making

2   -- providing the student with what they need, when

3   they need it. And I think that's where -- and

4   this is kind of earth shattering, but maybe not --

5   is the whole idea of our grade system and what --

6   when a child must be prepared; by grade five, they

7   must know this body of knowledge.

8   And so one of the things that we're able

9   to do with technology, and with online and

10   on-ground technology, is we're able to level the

11   type of learning and provide the exact appropriate

12   amount of content that a child needs at that

13   level. And some of the technologies that we have

14   available, us and other organizations, it doesn't

15   simply deliver that same content to you, it will

16   level it. It will bring it down to your level.

17   It will change it. So if it's a reading piece of

18   software, that it will level the reading so it

19   brings it to your level as opposed to you trying

20   -- needing that grandmother, hopefully, the

21   software can actually adapt for you.

22   So those things are happening right now.

1   And again, bandwidth is the limit to that because

2   if we can only deliver that in the classroom, it's

3   only available to those students that have it in

4   the lab when they have it available to them at

5   those specific hours during the day.

6   DR. ZELMAN: You know, I want to

7   comment, saying that, you know, with this new

8   technology, we might actually change our whole

9   definition of what is some -- what is a special

10   needs student. Because the reality is that we

11   know from neuroscience research that people learn

12   in different ways. And that we've had a

13   one-size-fits-all sort of technology, which

14   really, I think, produced a lot of sort of unjust

15   sort of labeling for kids who carry that baggage

16   around with them to their adulthood.

17   And so I think this is going to be a

18   very interesting sort of paradigm switch about how

19   we think about multiple intelligences and ability,

20   and really change our whole definition.

21   DR. JOHNSON: I agree with that. The

22   CDT has been spending some time working with the

1   United Cerebral Palsy on their Life without Limits

2   project. And one realization that drives that is

3   that we always evaluate how abled people are --

4   and some like to say how temporarily abled

5   everyone is -- with reference to whatever one

6   could, in theory, do. And the one benefit of

7   technology is we're all disabled now because we're

8   facing all these new things that we have to learn

9   how to do.

10   The other major lesson is that people

11   with one kind of disability may be able to help

12   other people with a different kind of disability,

13   and help each other and compensate in various ways

14   and, in fact, innovate in various ways, which is

15   taking place in that community. So, again, I

16   think part of the answer is to spread the

17   community of people who are contributing to the

18   solution.

19   DR. ZELMAN: Just one plug for our Ready

20   to Learn. We know from two of our programs,

21   WordWorld and SUPER WHY, we're getting a lot of

22   mail from parents of children who are autistic,

1   saying how important these programs have been to

2   them and how it's really promoting language

3   development. And these children just watch it

4   over and over and over again with, the parents

5   telling us anecdotally, great success.

6   MR. MIDGLEY: Thank you. I also want to

7   give credit to Joseph, who was the one that raised

8   a portion of that question online. So I'm going

9   to follow up with a question and move us sort of

10   potentially out of the pan and into the fire. See

11   what you think.

12   So there's -- the first panel mentioned

13   quite a bit about open resources and the

14   innovations that are happening with free resources

15   available from many sources around the web that

16   are being produced in peer communities, through

17   government dollars, other resources that don't

18   have a profit motive tied to them. These are now

19   just starting to come into competition with

20   traditional resources and media that might be put

21   out by a corporation that licenses them, for

22   example, CPB or Pearson or others.

1   I know this is not a new subject to any

2   of you, but I would be curious to have your

3   reflections and maybe your examination of the

4   potentials for the future with regard to this

5   emerging marketplace with open and licensed

6   resources sitting next to each other in the

7   textbook or in the classroom.

8   Pearson first.

9   MR. HITCHCOCK: I see Bobby is actually

10   smiling in there. Because Bobby and I have --

11   from Cruikki have had this conversation a number

12   of times, so. And I think it's a very good

13   question.

14   And there are a number of ways to answer

15   it. And we do see a lot of value in a lot of the

16   things that are out there with regard to open

17   source content, open source systems.

18   For an open source system, in many ways,

19   there's a phrase. And it really is -- it will

20   make you smile, but it really is kind of

21   interesting, is that open source software in

22   itself is free, but it's like free puppies. You

1   know, you have to know -- you have to take care of

2   it. You have to actually build all the

3   infrastructure to be able to manage it or you have

4   to hire someone or you have to actually invest in

5   (inaudible) computing to be able to do that. So,

6   free does not -- or open source does not always

7   mean free. And then there's the management that

8   goes along with it.

9   With regard to the open source content,

10   there are some great -- there are great content

11   out there. One of the things that we're starting

12   to see who -- and, again, keeping in mind that we

13   are also looking for how we can be part of the

14   open source community. But some of the things

15   we're hearing in the initial phases is with regard

16   to where the content came from. And we've

17   actually seen content that will be submitted to

18   areas as open source that is actually Pearson

19   content. And that's really not anyone's fault.

20   But in many cases, people don't understand what

21   they can actually use and what is open source, and

22   if they've read it, or what becomes theirs. So,

1   open source isn't always uncopyrighted material.

2   The other thing is with regard to

3   efficacy. And when you start looking at the

4   latent semantic technology that you mentioned with

5   regard to Right to Learn, and the diagnostic tools

6   that go behind that, it's really managing the

7   technology and the content together to be able to

8   deliver something that's performance. We can

9   actually take our content and put it out there and

10   put it on the web for free, but we don't think

11   that's effective. We think the key is in tying

12   technology and content together in order to focus

13   on student outcomes and student learning and

14   trying to drive that. And by breaking it up into

15   -- putting it into small pieces that may be free

16   on the web that a teacher can use, we don't feel

17   we'll really move the needle with student

18   performance the way we would like to.

19   DR. JOHNSON: I hope that's right. And

20   it opens up the possibility of a Red Hat model

21   here in which you can both invite the open source

22   community of enthusiasts to build content and

 1   interactive modules and add value with the kind of

 2   maintenance and data integration that you're

 3   talking about, and you could still make money.

 4   And you can still induce people to contribute the

 5   content.

 6   The game I showed you, by the way, did

 7   not involve programmers. And when the Macintosh

 8   was released some time ago they put out a program

 9   called HyperCard, which now has lineal

10   descendents, which generated millions of adopters,

11   a lot of them being classroom teachers who just

12   wanted to build a little interactive thing. So

13   there's -- have a reason to believe that you can

14   generate an upwelling of interactive teaching and

15   automated coaches kinds of things, and maybe build

16   a business model by adding value and supporting it

17   and providing a good index to it and so forth.

18   What I worry about in the realm of

19   assertions of intellectual property, though, is

20   whether those who want to enforce the rights to

21   their material and insist on a license to

22   everything will start -- will begin to challenge

1   the idea of fair use in the context of the online

2   classroom. We already have a serious problem

3   producing documentaries in this country because

4   you can't figure out where the material came from.

5   So, we should talk and do a deal, is what I'm

6   saying.

7   DR. ZELMAN: You know, it's not an

8   either-or, it's the genius of the and. And in

9   public broadcasting, we're really sort of

10   rethinking our business models and trying to sort

11   of figure this out. And they are very hard

12   discussions because a lot of our systems, quite

13   frankly, are closed and antiquated.

14   MR. MIDGLEY: Thank you. I would

15   encourage anyone in the audience who has more

16   questions to submit them. I'm going to give a

17   question over to Kristen, here.

18   MS. KANE: I have a question. I'd be

19   interested in each of your perspectives on the

20   grandmother coming with it challenge. And that is

21   how would you assess the current capacity of

22   instructors at both the postsecondary level and

1   the K-12 level to integrate technology in the

2   classroom in a routine and sophisticated way right

3   now? Just where do you think we are and is that a

4   barrier at the moment? If so, what can the

5   federal government do to help overcome it?

6   DR. ZELMAN: Well, you know, even young

7   teachers who grew up with this technology, doesn't

8   necessarily mean that they know how to use it for

9   instructional purposes in the classroom. And

10   quite frankly, what we think there needs to be is

11   sort of a national digital teacher corps, where we

12   first think about who is training our teachers and

13   make sure that they have a sense of the new

14   technology and the possibilities and train them,

15   as well as thinking about how we, sort of, train

16   teachers online.

17   Now, we do have some online programs in

18   public service media, such as PBS Teachers Online,

19   Teachers Domain, which, you know, tried to sort of

20   train teachers on new technology, but it's

21   certainly not enough.

22   I mean, one of our ideas is that we have

1   48 stations on college and university campuses,

2   and not many of them have knocked on the School of

3   Education to say, hey, I'm here. I'm a resource

4   because I'm using new digital media. I know how

5   to create new digital media. And I could really

6   be of help to you as you think about developing

7   courses online on training teachers on how to use

8   this new -- these new emerging technologies in the

9   schools.

10   But we really need a, I think, a

11   stronger federal investment in this, particularly

12   as state budgets are declining.

13   DR. JOHNSON: Well, I'm not an expert on

14   the current state, but my sense is that it's a

15   failing strategy to think that the teachers should

16   be uniquely the ones who play the role of

17   encouraging students through the technology.

18   In fact, some of the best course designs

19   I've seen have been ones in which there's a

20   teacher, but an outside party as well to -- with

21   whom the students are sent to engage. So the

22   teacher becomes more of a coach in the -- and you

1   can leverage the time and effort of people who I

2   think you would find many, many people will be

3   willing to spend small amounts of their time

4   encouraging students in various ways or telling

5   them what they know.

6   The other ingredient that has to be

7   added here is that the student themselves is the

8   best coach. Somebody in one of our State of Play

9   conferences said multiplayer online games are

10   great for learners and terrible for teachers. And

11   some of our designs involve a law student learning

12   checklist, where we say to the student, here are

13   the 57 things you could be better at, here are 57

14   different ways that -- to go out and find out more

15   about them, evaluate yourself from time to time.

16   And so I think there are lots of

17   different answers, and they don't all run through

18   making teachers more like technologists.

19   MR. MIDGLEY: That's great. Thank you.

20   I think that we are just at the time mark. I want

21   to recognize that there were a number of questions

22   coming in from lots of channels relating to

1   bandwidth and access. And I'm going to pass those

2   on to our next panel. So I use that as a bit of a

3   segue, which will be covering E-rate and some

4   infrastructure questions.

5   But before that, I want to thank Susan

6   Zelman, Todd Hitchcock, and David Johnson for

7   participating in this panel. Your contribution

8   was immense and we definitely appreciate you

9   taking the time to be here today. Thank you.

10   (Recess)

11   MS. BROWN: Hello and welcome to the

12   last panel discussion of the day as part of the

13   education workshop, The Future of E-Rate.

14   The Commission has long recognized the

15   importance of broadband Internet services in their

16   critical role in advancing the availability of

17   educational and informational resources. When

18   establishing the Schools and Libraries Universal

19   Service Support Mechanism, also known as E-Rate,

20   Congress noted that advance telecommunication

21   supported through the Universal Service Fund,

22   would help open world of knowledge, learning, and

1   education to all Americans, rich and poor, rural

2   and urban.

3   Under the E-Rate program, funding has

4   provided millions of school children, teachers,

5   and library patrons access to modern

6   telecommunications and information services. In

7   funding year 2008 alone, the E-Rate program

8   committed approximately $269 million in Internet

9   access and approximately $430 million in internal

10   connections which can be used to connect classroom

11   and buildings for Internet services.

12   It also committed approximately $1

13   billion in telecommunication services, a portion

14   of which could also be used to provide broadband

15   services. Further, according to a study released

16   by the National Center for Education Statistics,

17   in 2006, nearly 100 percent of public schools in

18   the United States had Internet access and 97

19   percent at these schools use broadband connections

20   to access the Internet. That's why we believe the

21   E-Rate program has assisted in the deployment of

22   broadband technology within schools and libraries.

1   We're interested in gaining additional insight

2   into ways in which the E-Rate program can increase

3   broadband usage and access between schools and

4   libraries.

5   It is against this backdrop that we

6   introduce our distinguished panelists today. Dr.

7   Sheryl Abshire, chief technology officer of the

8   Calcasieu Parish school system in Lake Charles,

9   Louisiana; Tom Greaves, chairman of the Greaves

10   Group located in California; Chris Lehmann,

11   principal of the Science Leadership Academy

12   located in Philadelphia, Pennsylvania; and Carrie

13   Lowe, director of the program on networks for the

14   Office of Information Technology Policy with the

15   American Library Association located here in D.C.

16   A few words of just how we're going to

17   conduct this panel before the panelists provide

18   their brief remarks and statements. This panel is

19   set up for an hour, a half of which we will hear

20   from the panelists. We have asked them to limit

21   their presentations to about five minutes in

22   length. The second half-hour we will take

1   questions from here, the audience, and also via

2   the web. Martin Adel sitting to the left over

3   here at the computer will be taking the questions

4   from within the audience, so please get his

5   attention if you have a question. I believe there

6   are index cards located on the back table as well

7   as Martin Adel has some. Also, we will be taking

8   questions via the web from James Bachtell and also

9   Cara Voth will be facilitating the

10   question-and-answer period during the second

11   half-hour.

12   With that said, and without further ado,

13   we will turn to our first panelist, Dr. Sheryl

14   Abshire.

15   DR. ABSHIRE: Thank you very much,

16   Regina. And I want to thank the Commission for

17   providing me with the opportunity to provide input

18   to the design of a national broadband plan.

19   As Regina mentioned, I'm Sheryl Abshire

20   and I'm the chief technology officer for the

21   Calcasieu Parish schools in Lake Charles,

22   Louisiana. I've held that position for

1 approximately 10 years and I've been an educator

2 for over 36 years. I began, as many educators

3 did, as a classroom teacher, was a library media

4 specialist for over a decade, a school principal,

5 teach face-to-face and online at several different

6 universities, and I have substantial experience in

7 the use of technology in schools and classrooms.

8 But more importantly to the point of today's

9 workshop, I've been responsible for district-wide

10 E-Rate applications since the inception of the

11 program and I've just completed a very long and

12 very arduous E-Rate audit. So I am a survivor of

13 that and I'm here today to represent COSN, the

14 Consortium for School Networking, which is a

15 nonprofit association promoting the use of

16 technology and the Internet to improve K-12

17 education.

18 COSN and ISTY, the International Society

19 for Technology, have long been partners working on

20 federal policy and championing the very effective

21 E-Rate program. We believe that E-Rate has had a

22 substantial impact on delivering broadband to

1   schools and libraries nationwide and that it

2   should have a major role in the forthcoming

3   broadband plan.

4   My comments today include a few proposed

5   changes to E-Rate that I believe will not only

6   provide more support for the program, but enhance

7   the program's ability to deliver broadband

8   services to schools and libraries.

9   Before I turn to E-Rate's future, let me

10   talk to you just a moment about the significant

11   effect that E-Rate had played on a very, very

12   local level in my school district. Lake Charles

13   is the southwest corner of Louisiana, also known

14   as "Hurricane Alley." We educate over 33,000

15   students and employ over 6,000 people. We're the

16   sixth largest district in the state and we're the

17   largest employer in the parish. Thirty-eight

18   percent of our students are from minority groups

19   and 59 percent of our students are eligible for

20   free and reduced lunches, which translated this

21   year into a 73 percent E-Rate discount rate.

22   When E-Rate began back in the early

1   days, our telecommunications consisted of a few

2   dial-up lines in school libraries and some random

3   training showing teachers how to use a computer,

4   how to use a certain program with a child, nothing

5   sophisticated. Today, all that has changed. We

6   now have over 20,000 computers on the network and

7   at any given moment, between 12,000 and 15,000 are

8   accessing the vast resources of the Internet.

9   Our teachers, our students, our

10   administrators, make requests for over 5 million

11   web pages or network objects every day. Over

12   35,000 e-mails are broadcast. We transmit almost

13   19 gigabytes of data. And for all that work and a

14   decade of commitment to that, the Center for

15   Digital Education, the National School Boards

16   association, recognized us as one of the most

17   digitally advanced large school districts in the

18   country. And so how does that all happen in a

19   decade? Well, it's a short answer: A lot of it

20   is contributed to E-Rate.

21   We've received to date almost $5 million

22   and most of that money, a sizable chunk, has gone

1   to support the Internet connections and the wide

2   area network. But we've not been satisfied in

3   Calcasieu Parish with just wiring our schools and

4   our classrooms. We understand very, very clearly

5   that the Internet is only valuable if it leads to

6   improvement in teaching and learning and for that

7   reason, no technology in our district has been

8   leveraged without significant professional

9   development.

10   Annually, over 500 teachers are trained

11   both face- to-face and online. We have a deep --

12   a decade long partnership with McNeese State

13   University, which is the sole -- almost the sole

14   provider of teachers into our region, and so we

15   train over 300 pre-service teachers a day. And

16   all teachers -- all teachers -- are adept at

17   online learning and that has paid off. That's

18   paid off for us in many ways, not only in terms of

19   disaster recovery where we can continue school

20   when schools cannot physically open for us due to

21   inclement weather, but also in terms of just a few

22   weeks ago we were awarded the 2009 Blackboard

1   Catalyst Award for K-12 excellence in the country

2   and blended learning, and this was specifically

3   for online professional development. But most

4   importantly, we're really succeeding where it

5   counts: At the student level.

6   One of our success stories that I would

7   point to is John F. Kennedy Elementary, a Title I

8   school with 96 percent of its students that have

9   free and reduced lunch. The problem: Lack of

10 technology, lack of teacher training, children

11 with no access to resource. And so we

12 strategically levered Title I resources, began

13 intensive staff development in the use of

14 technology as a critical resource, put a lot of

15 time and money into teacher professional

16 development, and just recently that school was

17 named one of the Title I award winners for

18 excellence and improvement.

19   With all of that being said, there's no

20 doubt that there's some changes to E-Rate that

21 need to be made. Number one, and foremost in my

22 mind, is that the E-Rate cap must be raised.

1   Since the program's second year, the Commission

2   has not raised the annual cap above its $2.25

3   billion funding level, not even to provide an

4   inflation adjustment. On average the annual

5   demand for E-Rate support outstrips that annual

6   cap by $1.75 billion with this year's $3.99

7   billion mirroring that average shortfall. I think

8   these estimates are low and the reason I would say

9   that they are low is because many schools and

10   libraries no longer even apply for priority to

11   services because they know their odds of success

12   are very slim.

13   Another one is that, the poorest of our

14   schools, shortly, with this significant rise in

15   requests, even those at the 96 percent discount

16   will probably soon not be able to use internal

17   connections. There's no doubt that Priority 1

18   funding has taken a bigger and bigger share of

19   this funding and it's because 21st century

20   learning environments demand and require more

21   bandwidth. Teachers and students demand and

22   require more bandwidth. We've heard from our

1   panelists this afternoon about what it's going to

2   take to really provide the type of educational

3   opportunities that students require and they've

4   talked about the applications that are needed.

5   Those can't run, as someone said earlier, on a 256

6   line. It's impossible.

7   My district is no different than many

8   others. We have suffered significantly from the

9   lack of available E-Rate funding. The only year

10   that we were able to get internal connections in

11   recent memory was in 2006-2007 and that took a

12   massive hurricane basically swamping the parish,

13   closing schools for over a month, and a special

14   exemption from the Commission for all of our

15   schools to be able to get internal connections.

16   We don't expect any this year because we're in

17   that mid-discount -- the mid-70 range discount.

18   The lack of this ability to increase our broadband

19   to the levels that we've talked about this

20   afternoon is crippling our district educationally

21   in my opinion.

22   We operate 100 megabits internally

1   connected network with 100 megabits to the

2   Internet, and with the massive use of online

3   learning and digital content that's needed, this

4   level of service is grossly inadequate. Last year

5   for the first time, we put in bandwidth caps and

6   that paralyzed learning in many, many ways. As an

7   example, in a classroom we have at least five

8   computers in every one, but yet we can only

9   guaranty two wired connections per classroom. So

10   let me make the analogy, imagine if you had five

11   phones, but only two could dial out; or if you had

12   five cars, but only two of them had any wheels; or

13   if you had five ships, but only two could get out

14   of the dock. Now, imagine having five computers,

15   but only two can access the information on the

16   Internet. What do we tell the other three

17   students? What computer would you want to use?

18   Well, that's how our students and our teachers

19   feel -- so close, but yet so far.

20   These goals of improving bandwidth for

21   us and increasing educational opportunities for

22   students can only be done with bigger E-Rate

1   dollars and predictable and sustainable funding,

2   so we need approximately -- my suggestion is $4

3   billion.

4   The other issue that I would like to

5   bring to the table is that the Commission can

6   leverage broadband availability in schools by

7   altering current E-Rate rules to allow community

8   members to use E-Rate services for continuing

9   education and similar purposes for the community

10   after school. The requirements have been met for

11   E-Rate and if we have to cost allocate out the

12   resources on an application, most districts won't

13   even go to the trouble.

14   With this change in rule, we could

15   provide access to classes that the working poor

16   and the underprivileged in our community so

17   desperately need because they lack the basic

18   technology skills. I know that many people are

19   purporting the use of E-Rate for

20   non-telecommunication services, hardware,

21   software, professional development. I'm going to

22   come down not in favor of that because I believe

1   that the E-Rate is already oversubscribed and I

2   don't believe that these arguments justify

3   applying E-Rate dollars to other equipments and

4   services until we have the broadband issue solved.

5   There's no need to stimulate the demand.

6   It's there and it's been there for years.

7   I want to thank you for the opportunity

8   to speak about E-Rate this afternoon. I know my

9   time has quickly waned here. Please know that the

10   E-Rate, we are grateful and thankful for this in

11   America's schools and our libraries. We come to

12   you seeking improvements for all of the schools

13   and libraries, and I'm confident that E-Rate can

14   play an even larger role in future broadband

15   dissemination and usage if the annual cap is

16   raised and after school rules are relaxed.

17   Thank you for the opportunity.

18   MS. BROWN: And thank you, Sheryl, for

19   coming and providing your valuable insight.

20   Mr. Greaves?

21   MR. GREAVES: Hi, my name is Tom

22   Greaves. And Sheryl, that was impressive. I

1   think that you mirror many schools in American

2   school districts. They're doing outstanding work

3   on limited budgets and funds.

4   It's a privilege to be here today to

5   represent the broadband needs of the 45 million

6   public school children. And as I was thinking

7   about coming to the FCC, about my first

8   experiences with computers and with education and

9   the FCC, it goes back to 1956, where my dad took

10   me to Carnegie Tech and I got to work on an IBM

11   650 mainframe computer. The following year, I

12   built my own computer that would do Tic- Tac-Toe,

13   this was in '57 and then in '58, I had a ham radio

14   license and I got written up in the Cleveland

15   Plain Dealer for doing homework over the radio

16   waves. We didn't have the Internet back then. I

17   just did a quick calculation and we were doing it

18   at 2 bits per second, so I've gone from 2 bits per

19   second to now gigabits per second and there's

20   never enough bandwidth, I can tell you that.

21   My purpose today is to give you an

22   accurate picture of where schools are with the

1   broadband and where they are going and also to

2   introduce a new idea that just as building

3   interstate highways, providing the broadband

4   coverage to schools has economic advantages and so

5   it doesn't really cost money to do that in the

6   long term. At the state and federal level, it

7   saves money.

8   My experience comes from the two studies

9   that I did with my partner Jeanne Hayes of the

10   Hayes Connection called "America's Digital

11   Schools." And these two studies we surveyed the

12   top 2,500 schools in America, we asked them a lot

13   of questions, including about where they were with

14   broadband today and where they would like to go in

15   five years, and we have -- I'll share a few of

16   those answers today.

17   I'm going to move pretty quickly through

18   this material, but I'm available afterwards and

19   offline to get into it deeper with anybody that

20   would like to. Next slide please.

21   So, one of the things that this slide

22   shows that in 2008, which is up substantially from

1   2006, the average kid has about 6 kilobits per

2   second access -- 6 kilobits per second per student

3   in school. So, yes, we have the broadband, but

4   these same kids go home and they have 6 megabits

5   per second. It doesn't take a rocket scientist or

6   a STEM education to figure out that there's a

7   problem.

8   Now, we call this a crisis because not

9   only are the schools underfunded with broadband

10   today, but looking forward, there's a lot of

11   trouble on the horizon. Next slide please.

12   The first problem we see on the horizon

13   is that most of the schools, or 54 percent of

14   them, think that they're not going to be able to

15   get the money to expand broadband the way they

16   need it. Just as Sheryl was pointing out -- and

17   when Category 1 is used up, a T-I line that cost

18   $400 under subsidy might go to $1,500, and so it's

19   really going to hit in the pocketbooks. Some 34

20   percent feel that even if they had the money, they

21   won't be able to get the broadband, and that's

22   because they maybe live out in the country, the

1   phone company isn't going to pull another copper

2   strand to their school or put in fiber. And then

3   47 percent feel that they E-Rate is not going to

4   meet their needs. And for the rest of those, the

5   60 percent that think the E-Rate is okay, I think

6   they're either not using it or they're not paying

7   attention. Next slide.

8   Now, when the E-Rate got started back in

9   '96, one of the things that was put forward is

10   that it would allow students to have access to

11   rich media. We'd have videos from the Library of

12   Congress and things like that. And as Sheryl was

13   saying, now most of the schools in America, over

14   60 percent, are filtering their bandwidth

15   requirements. They're throttling things back, and

16   so the best parts of the Internet are now being

17   shaped throttled out so that the schools don't

18   have access to them. I think this is another

19   major problem.

20   All these contribute in a way to what

21   we're calling the crisis. Again, there's more

22   behind this, but time doesn't permit me to go into

1   it. Next slide, please.

2   Now, I think most of the people in this

3   room know why we need broadband and there are some

4   things not mentioned on this slide that I'll touch

5   on, but the access to information, being able to

6   get rid of the barriers of time and distance and

7   so forth, there was a girl that I was interviewing

8   one time and she said that with the Internet she

9   could find the answer to any question. I said

10   what about before computers? She said before

11   computers, I wasn't able to find the answer to any

12   question.

13   So if you're in a school and you want to

14   know why rain clouds are black, you can type it

15   into the computer and you'll get the answer. If

16   you ask your teacher, it might not be on her

17   agenda to answer it or whatever.

18   Secondly is personalization. It's been

19   mentioned many times here today, but

20   personalization is the Holy Grail to improve

21   student performance. We're all different, we all

22   learn differently. Personalization cannot be done

1   with texts. You can do it, but you can only

2   personalize in just a very few modalities. I'm

3   talking about personalizing in maybe 100

4   modalities. To be effective, that requires

5   digital content. The digital content has to be

6   available everywhere, everywhere that a textbook

7   is available. And so to do that, I believe that

8   every student needs a device of some kind -- we

9   can argue about what kind -- but it needs to be

10 connected to the Internet. And at a school that's

11 through Wi-Fi and out of school that's for

12 cellular data or WiMAX offerings.

13   So, it hasn't been brought up here

14 before, but I believe that Internet -- that the

15 E-Rate should be expanded to cover student data

16 wherever they are. Next slide, please.

17   Let's talk about the economy. I won't

18 go into this. You can read the slide, but in

19 Project RED, which is a project I'm working on

20 that's being driven by the nonprofit of Michigan

21 called the One-To-One Institute, we're now seeing

22 that gathering the data to show a properly

    1   implemented educational system is revenue positive

    2   at the state level and that requires broadband to

    3   be properly implemented. There will be more on

    4   that coming out later. Next slide, please.

    5   So, I have a few recommendations for the

    6   FCC and members of Congress. First of all, I

    7   appreciate Sheryl and $4 billion, but -- she's a

    8   bargain. I think it ought to be six or even

    9   eight, and I do that because of knowing where

   10   we're going, not where we are today. You have to

   11   look out in the future and all these trends that

   12   are driving the Internet are going to continue.

   13   The bandwidth requirements of the rest of the

   14   world, let alone schools, are doubling every year

   15   or 18 months. They're going to do that in

   16   schools. Now, the cost doesn't go up linearly,

   17   but if we did $6 billion today, we're going to

   18   need more than that next year.

   19   Secondly, I talked about mobile

   20   broadband. I think that the students need to have

   21   access with mobile broadband wherever they are.

   22   Obviously that's an issue. It costs a lot, but I

1   think there are ways to limit it to school use and

2   keep the costs under control.

3   Thirdly, I think -- let's talk about

4   spectrum. The school's own 2.5 spectrum for EBS

5   broadcast many places and that's getting converted

6   in some of them, like in Upper Michigan, to

7   provide wide area network coverage for students.

8   That could be done everywhere. Now, I realize

9   that a lot of that spectrum has been sold or

10   licensed to providers that are out there looking

11   to provide 3G and 4G, but in many places like

12   Choteau, Montana, or Shures, Nevada, Clear Wire or

13   AT&T or Verizon is not going to be there. Let the

14   schools go back and get a piece of that 2.5

15   spectrum and put up their own networks.

16   Equipment. There's another little known

17   frequency out there called 3.65 and that's license

18   light. Any school, or you, can go set up your own

19   3G network, or 4G network, with 3.65 spectrum.

20   The problem we've got with 3.65 is that it's

21   limited in the mobile. If you have a laptop, it's

22   limited in power. That's because they're

1 envisioning people driving down the highway with

2 it.

3   Kids are not going to be driving down

4 the highway, so they could have nomadic use. And

5 if that were lifted, it would be a great benefit

6 to the schools.

7   And finally, I think that there are a

8 number of things that could be done, incentives,

9 as was mentioned earlier, tax incentives, and get

10 all the providers the bandwidth and the consumers

11 the bandwidth, to think outside the box and look

12 for creative ways to solve our problem within the

13 budgets that we have and also that would be

14 extended.

15   I thank you for your attention. Just

16 remember a few things: Number one, that we have a

17 crisis. Number two, that this crisis isn't going

18 away on its own. And number three, that a

19 broadband coverage is essential to great schools

20 in America. Thank you.

21   MS. BROWN: And thank you. I think you

22 provided some really good recommendations there

1   for us to consider.

2   MR. GREAVES: The next slide has got

3   some references, too, so you'll be able to see it

4   online.

5   MS. BROWN: There we go. Okay. Mr.

6   Lehmann?

7   MR. LEHMANN: Great. So, I'm here to

8   talk a little bit differently about sort of how we

9   can use E-Rate funding to really re-imagine what I

10   think schools can be. E-Rate funding has, without

11   question, in many, many places, created the

12   technical framework to truly revolutionize

13   education by wiring thousands of schools across

14   the country and so there is now the technological

15   infrastructure to re-imagine what schools are.

16   However, the complaint that we hear too often from

17   too many people -- from educators, from students,

18   from parents -- is that despite the infusion of

19   billions of dollars in wiring, hardware, et

20   cetera, we are not seeing change happen quickly

21   enough where it matters the most: In the

22   classroom.

1   I dare any of you to stand outside of

2   any high school in America at dismissal and what

3   you will see is students rushing to their

4   knapsacks and pockets to pull all of the devices

5   that are banned throughout their days at school.

6   Increasingly, as our kids live more and more of a

7   digital life, school is becoming a place that has

8   little to nothing to do with the ways kids live

9   the rest of their lives. That must change. And

10   what I argue is that we must allow teachers the

11   opportunity to re-envision what their classrooms

12   can be, and the only way to do that is to give

13   them the time and the training they need to get

14   there. We, all of us -- parents, educators,

15   students, policymakers -- must be willing to

16   rethink many of the basic assumptions that we have

17   about our classes and our schools. E-Rate must

18   help us re-imagine what schools can be by helping

19   us in that process. This does require a change in

20   the funding formulas to allow for more Priority 2

21   funding, allowing for teacher training, especially

22   where the broadband issue has been, in many ways,

1   solved, and raising the cap as demand for

2   broadband continues to grow and our definition of

3   school continues to change.

4   The sad thing is this photo that is

5   behind you was taken off of Flickr. It's a

6   creative commons license. And someone was

7   bragging about their new classroom and how

8   beautiful it was and certainly it's well lit and I

9   suppose the stanchions of the desk are blue, which

10   is new, but otherwise this is a picture that could

11   have been taken at any time over the last 100

12   years of the American educational experiment.

13   We must understand that schools are

14   changing whether we like it or not. Clayton

15   Christensen in his book Disrupting Class makes the

16   claim that by 2019, half of all high school

17   classes will be taught either fully online or in a

18   blended fashion between 30 and 80 percent of the

19   interaction happening online. There's no

20   question, as we become a more and more wired

21   society, and as schools increase bandwidth, there

22   is no technological reason this cannot happen.

1   But what will those classes look like? How will

2   they be taught? What will they value? And who

3   will teach them?

4   The point is, if we've spent billions

5   wiring schools, we must also commit the money to

6   spend to help teachers leverage the tools. And to

7   really hammer that point home, Neil Postman, one

8   of my favorite theorists, says that certain

9   technologies are not additive, but are

10   transformative. He uses the Guttenberg printing

11   press as his example, where he says, "When the

12   printing press was invented, you didn't have

13   Europe plus books. You had a whole new Europe, a

14   truly transformed society."   What E-Rate funding

15   should do is not create schools plus computers,

16   schools plus the Internet, but rather what it

17   should give us the ability to do is re-imagine

18   whole new schools, things we cannot even dream

19   about. Next slide, please.

20   So, what does that look like? Well, the

21   term that you hear being thrown around sometimes

22   is this idea of School 2.0, a re-imagining of

     1   school. Science Leadership Academy, a school that

     2   we started in Philadelphia, is a partnership high

     3   school between the school district of Philadelphia

     4   and the Franklin Institute, an esteemed science

     5   and technology museum in Philadelphia. We are a

     6   one-to-one laptop school where every child does

     7   have a Mac computer and we are trying to really

     8   pioneer some of these ideas behind School 2.0.

     9   Every single class is a blended class happening

    10   both on- and offline. We use multiple open source

    11   resources like Moodle and Drupal and Koha to

    12   provide a fully realized online solution for kids

    13   while also powerfully, powerfully valuing the time

    14   that we spend together in class. Broadband

    15   technology allows for student empowerment,

    16   learning that puts the power in the hands of the

    17   children, not by devaluing the classroom, but by

    18   revaluing it. And to that point, we must

    19   understand that sometimes it's not about the

    20   learning outcomes, it's not about the only things

    21   that we had as predetermined solutions that we

    22   thought kids would come to, but rather the answers

1   they come to themselves, beyond our expectations,

2   over and above anything we could have dreamed of.

3   The single greatest challenge for us in

4   schools today is to help students make sense of an

5   ever-changing world. We have gone from a society

6   and a school system that was based on information

7   scarcity to one of information overload, but a

8   student sitting at home logged into a webinar to a

9   lecture is not the answer. The classroom needs to

10   be part of the solution. There is no question

11   that learning in class should not be defined by

12   the time and space that the class happens to

13   occupy. There is no question that the power of

14   broadband is that learning class itself can now be

15   24/7, 365, but only if we close the gap between

16   the access students have at school and the access

17   they have at home, but also if we understand that

18   that classroom time, that community time, real or

19   virtual, is powerful. The classroom should be

20   where we come together to make meaning because we

21   know that synthesis and collaboration work. My

22   ideas will be better because they have interacted

1   with yours and I have been changed for that.

2   If all we do with broadband technologies

3   is create a system with more efficient ways to

4   "deliver content with predetermined objectives and

5   predetermined outcomes," all we would have done is

6   repeat the mistakes of the 1950s, when we thought

7   TV would revolutionize our schools by delivering

8   the best content in the world. Instead we need to

9   understand what schools can be when they become

10   transparent through the use of broadband. When

11   the classroom and the teacher in the front of the

12   room and the school library are not the end all

13   and be all of acquiring information, schools can

14   become truly inquiry driven. We can start with

15   the questions the community asks together and end

16   with the reflections on the answers we find.

17   Schools can be empowering. What held

18   down the progressive school movements of the last

19   100 years was not that the ideas were wrong, but

20   rather it just took too long to create those

21   authentic examples of learning.

22   With the tools at our disposal today,

1   students can research, collaborate, create,

2   present, and network in meaningful, powerful ways.

3   We actually now have the tools at our disposal to

4   achieve John Druhi's dream of what schools can be.

5   Schools can be transformative.

6   When we harness broadband technologies,

7   students can be authentic voices in the world. At

8   Science Leadership Academy, a group of 30 students

9   and a dedicated, passionate teacher created a new

10   way to create biodiesel fuel. Biodiesel is

11   usually produced in a batch process. You throw

12   all the ingredients in, you stick it in the oven,

13   it comes out, you've got biodiesel. This sounds

14   simplistic because I was an English teacher.

15   Don't blame the kids, blame me.

16   What our students created was a way to

17   create a flow process biodiesel generator

18   constantly putting in the ingredients to create a

19   continuous flow. According to their calculations,

20   it is a 700 times more efficient way to create

21   biodiesel than what had been done before.

22   Here's where it gets cool. Yes, we've

1   got two patents pending on it: A design patent

2   and a process patent.

3   But more than that, the kids decided to

4   release it with a creative commons license to

5   anyone who wanted to use it for nonprofit

6   purposes. We're working with a village in

7   Guatemala and a village in Ecuador. They have

8   built what our kids designed and have gone from 4

9   hours of diesel a day to what they were buying

10   from Venezuela, to over 18 to 20 hours of

11   biodiesel every day using open sourced and

12   creative communications technologies to share the

13   information and take their villages off the grid.

14   That's transformative, that's empowering, and no

15   learning objective could have guess that that's

16   where we were going to go. That's what our

17   schools can be. Next slide, please.

18   None of this happens without teachers.

19   We need to find a way to leverage E-rate funding

20   to help teachers profoundly change their pedagogy

21   because teachers are, in many respects, more

22   important than ever before, but also we have to

1   recognize that their role has changed. What we

2   need today from the teachers in our schools, we

3   need teachers to be innovative, inquisitive, and

4   wise. We need teachers who are willing to change,

5   who understand that our societies have changed and

6   that if our schools don't change with them, they

7   will be rendered obsolete. We need teachers who

8   are inquisitive, who want to be learners as well,

9   and who care more about the kids in front of them

10   than they do about the store of content they have

11   in their own minds. And we need teachers who are

12   wise. More than anything else, this is what we

13   need. Kids today are trying to make sense of an

14   ever- changing world with more access to

15   information than ever before, some of it good, and

16   quite a lot of it bad. What our teachers need is

17   to help our students to turn information into

18   meaning and meaning to wisdom.

19   E-Rate, in many places, has taken care

20   of the first piece of the puzzle. It has put

21   thousands and thousands of schools online bringing

22   the bandwidth to the door. Now we need a

1   dedicated national teaching faculty that can be

2   part of that dialogue for change and we need

3   E-Rate funding to help us get there.

4   Thank you very much for the opportunity

5   to speak to you today and I really -- I appreciate

6   everything the FCC has done to wire our schools.

7   Thank you.

8   MS. BROWN: Thank you. Thank you for

9   the very powerful presentation.

10   And now, Ms. Lowe, who will speak to the

11   need for and use of broadband technology within

12   the libraries.

13   MS. LOWE: Thank you, Regina. If you're

14   wondering why Regina sort of tripped over my name

15   at the beginning, it's because I told James that

16   it's not pronounced "low," it actually rhymes with

17   "cow," so I'm sure you were considering whether

18   that was correct.

19   On behalf of the American Library

20   Association's more than 65,000 members, I'd like

21   to thank the FCC for inviting us to be part of

22   today's event. It's a real pleasure to sit here

1   with so many of my colleagues from the education

2   world. We're so glad that the Commission is

3   holding these meetings and including voices from

4   so many different groups that depend on the

5   creation of a visionary national broadband plan.

6   Libraries play a vital role in our

7   country's information landscape, providing no-fee

8   access to the Internet and online services, like

9   continuing education, like employment resources,

10   federal, state, and local e-government services,

11   and more. Libraries have seen massive growth in

12   the use of online services over the last few years

13   and every indication calls for a continued upward

14   trajectory in demand.

15   Major news outlets have reported on how

16   libraries have become lifelines to people who have

17   seen their lives turned upside down by the

18   economy. Besides providing access to online

19   training and job services, librarians provide

20   training in new technology skills, offer classes

21   on job searching, and more.

22   In one quick example, a library in Las

1   Vegas recently experienced a new casino opening

2   and the casino owners informed people that they

3   needed to apply for jobs online and that they

4   should go to the library to do so. So, these

5   local public libraries were experiencing lines out

6   the door, lines filled with people who were new to

7   computers, who had never touched a mouse before,

8   and who needed one-on-one assistance in setting up

9   e-mail accounts and then navigating online

10   applications. And we're seeing this in libraries

11   all across the country.

12   Librarians have an interest in every

13   aspect of the National Broadband Plan's

14   development, but we're particularly interested in

15   today's topic, which is E-Rate. E-Rate's been a

16   major success story for America's libraries.

17   Thanks to recent breakthroughs in our data

18   analysis, we know that 65 percent of public

19   libraries benefitted from the E-Rate program in

20   funding year 2007. These benefits range from

21   basic telephone services to high-speed broadband

22   connectivity, and they serve libraries in remote

 1   areas as well as in our most populous cities.

 2   Without E-Rate there is no way that

 3   libraries could have achieved the level of success

 4   that they have today. This critical and essential

 5   program has not only brought direct broadband

 6   access to libraries and schools, but it also

 7   benefits their surround communities. We've

 8   observed that when broadband services are made

 9   available to libraries and schools through the

10   E-Rate program, entire communities, regions, and

11   even states benefit.

12   E-Rate support often becomes the

13   catalyst for additional infrastructure investments

14   that bring new or upgraded services to consumers

15   in the area. The impact of E-Rate is not only on

16   schools and libraries, it's on America's

17   communities as well.

18   I don't need to tell this audience how

19   much technology and the need for technology have

20   changed in the 12-year life of the E-Rate program.

21   Libraries have gone from offering a single

22   terminal with dial up access in the mid- '90s, to

1   running highly complex, multiuser environments

2   which require a staggering amount of bandwidth.

3   Unfortunately, although needs have increased

4   during this time, the E-Rate program has not. As

5   you've heard from some of my co- presenters here,

6   the funding level for E-Rate is exactly what it

7   was 12 years ago. It's time to give serious

8   consideration to raising the E-Rate cap.

9   We're finding the E-Rate program to

10   reflect increased broadband demand will be an

11   essential component of the National Broadband

12   Plan. And as the Commission maps E-Rate's future,

13   we urge you to preserve the foundations of the

14   program as stated by the Joint Board in 1996. And

15   as an aside, I have to say I usually am walking

16   these halls with groups of librarians calling for

17   changes in the program, so it gives me particular

18   pleasure to point back to some of the original

19   foundational thoughts in this program and how

20   correct they were.

21   First, E-Rate must remain technology

22   neutral. E-Rate must continue to provide maximum

1   flexibility to purchase whatever package of

2   telecommunication services libraries believe will

3   meet its telecommunications needs most effectively

4   and efficiently. We've heard about a lot of neat

5   technologies here, but, as we all know, it's not

6   one size fits all. Schools and libraries need to

7   be able to choose what works for them and use

8   E-Rate to make that possible. The flexibility

9   that allows libraries and schools to take

10   advantage of available and evolving technology

11   solutions is a core principle of the program and

12   it needs to be preserved.

13   Second, E-Rate discounts must be based

14   on need. Closely related to the first point,

15   every eligible library must define for itself the

16   needs of its patrons and of its community. Given

17   the varying needs from community to community and

18   from state to state, the relative advantages or

19   disadvantages of different technology solutions to

20   meet those needs must be left up to the library to

21   decide. This core principle, allowing every

22   library to determine its own need and apply for

1   services and equipment that supports it, must also

2   be preserved.

3   Finally, E-Rate must make access

4   affordable. This point is particularly important

5   as we consider the National Broadband Plan and the

6   need to bring high bandwidth solutions to anchor

7   institutions like libraries.

8   Many libraries would welcome the

9   opportunity to use E-Rate to meet their

10   dramatically increasing bandwidth needs, but find

11   that, particularly in this economy, they simply

12   can't afford the non-discounted portion of the

13   costs of the needed services. There may be some

14   partial remedies for this in considering how

15   library discounts are calculated, but it's also

16   probably part of a larger policy question for a

17   re-envisioned E-Rate.

18   We strongly believe that the E-Rate

19   program for libraries and schools must be a key

20   component of the National Broadband Plan. Over

21   the last 12 years, the program has already had a

22   dramatic impact on making broadband solutions

1   possible in libraries across the country. We look

2   forward to working with the Commission as it

3   continues to look for further solutions to meet

4   today's broadband needs, including ways to make

5   the E-Rate program even more effective and

6   efficient in the future.

7   I'm going to give my last about four

8   minutes back to the panel, and thank you very

9   much.

10   MS. BROWN: Thank you. We'll move

11   directly into taking questions for our panelists

12   due to the limited amount of time. If you have

13   any questions here in the audience, please raise

14   your hand so Martin Adel can be sure to give you a

15   card and take your question.

16   I will turn it over now to Cara Voth,

17   who will facilitate the question period.

18   MS. VOTH: It's Cara Voth, sorry.

19   MS. BROWN: Excuse me, Cara.

20   MS. VOTH: I thought Regina knew me by

21   now. I think this question might be overflow from

22   the last panel. This comes from Steve Midgley,

1   who's the director of Educational Broadband Plan

2   here at the FCC, and I think he's just taking

3   advantage of all your expertise here, so --

4   because this is not directly E-Rate-relatable

5   question.

6   But he asks, "How should we fix the

7   school firewall problem where districts will block

8   large segments of media, like the (inaudible) or

9   blogs?" Anybody.

10   DR. ABSHIRE: I don't know if it's a

11 problem that you can use the term "fix" for --

12 because I think it's the issue around opening up

13 Web 2.0 resources in public schools is complex.

14 And so I don't think there's a simple solution to

15 it, but it goes back to the core that it's about

16 education.

17   It reminds me of when we first had

18 Internet in the schools and there was a great deal

19 of concern about the Internet and the resources

20 that it would bring, and do we really want our

21 children exposed to certain things. And it took

22 time and it took education -- education on the

1   community, education with teachers, education with

2   students -- about appropriate use, about fair use,

3   about resources that truly contribute to the

4   educational system, and then those that are

5   external resources that really don't have much

6   education value.

7   And so I think the question is that as

8   schools and school districts, and particularly

9   school boards who represent either the

10   conservatism or the liberalism of their

11   communities, become more comfortable and educated

12   about what those resources are, that I think we

13   have opportunities to demonstrate more and more

14   value about these types of resources and reduce

15   the fear factor. But it's not a new conversation

16   in public schools, fear of the unknown, and that's

17   what it is. It's the fear of the unknown. And

18   when you have school board members and parents

19   that all they hear about is MySpace and the

20   problems that the media has perpetuated, then

21   that's what we as public educators have to battle.

22   CNN, you know, is not doing a story on how

1   wonderful children are blogging about weather

2   around the world with children in different

3   continents. They want to talk about the one child

4   or the cheerleader that had a problem.

5   So I think we've got our work cut out

6   for us in public schools to do a better job in

7   terms of PR about what are those resources and to

8   reduce that fear of the unknown and really make

9   that knowledge ubiquitous about the power of

10   collaborative learning online. So, I don't think

11   it's a quick and easy answer, but I think time and

12   education will solve it.

13   MR. GREAVES: Another comment on that,

14   it isn't that -- it isn't a technology issue. We

15   have the technology to do any kind of filtering

16   that we'd like to. This really, as Sheryl said,

17   it's up to the local control to figure out what

18   they want to do and to educate their stakeholders.

19   MR. LEHMANN: And I would argue that

20   there is one very simple solution that many, many

21   districts could do, which is to take filtering out

22   of the hands of the technicians and put it into

1   the hands of the educators. I think that's the

2   first and most important thing that many places

3   need to do.

4   Secondly, though, I think we need to

5   understand that even with the untoward parts of

6   the Internet, even with the way MySpace can be

7   abused or what have you, if we deny ourselves

8   access to those sites, we deny ourselves access to

9   the teachable moment there. We need to be

10   teaching children about their digital footprint.

11   We need to be teaching children what it means that

12   today the notion we are the stories we tell is

13   more powerful than ever. And when all of those

14   sites that the students use to do that outside of

15   school are blocked inside of school, teachers are

16   no longer allowed to be part of that conversation,

17   and that is the biggest reason it needs to change

18   because, again, it gets back to this idea of

19   teaching wisdom. We have to help kids become

20   better digital citizens. It's one of the most

21   important things they're going to learn from us.

22   MS. VOTH: Thank you very much. We have

1   a question from our audience. This comes from

2   Bonnie Sutton. Thank you very much, Bonnie.

3   "Chris Lehmann talks about teacher professional

4   development. Has it ever been a national model?

5   If not, why not?"

6   What are your thoughts on that?

7   MR. LEHMANN: Well, I think it's an

8   interesting thing. I think that on some level

9   there are things that are national and there are

10   things that are regional and I'm not sure that the

11   way we would build a school in Philadelphia would

12   be the way we would build a school in Lake

13   Charles, Louisiana. And I think that there are --

14   and there's probably some very good reasons for

15   that.

16   I think we need a national discussion on

17   what school can be. Does that -- is that what

18   national professional development looks like?

19   Perhaps. I think that certainly the worst thing

20   we could do is assume that we are going to create

21   a national model of this and then sort of black

22   box it out to every school in America.

1   Should there be a national conversation

2   about what schools can be? Absolutely. Do

3   teachers absolutely need to be at the table and

4   part of that conversation? Absolutely. If we can

5   do that, I think we will have a better school

6   system than what we have.

7   DR. ABSHIRE: Can I jump in? I don't

8   know that it's about a national model, but I'm

9   going to come down the side of national leadership

10   because I think the conversation, whether it's the

11   local, the state, regional, or the national level

12   is that our schools and our school districts are

13   crying for good leaders and strong leadership that

14   provides models that are sustainable, that build

15   capacity, and that have the right answers to the

16   right problem.

17   You know, we've heard a lot today about

18   lots of solutions and I would submit that the

19   solutions are everywhere, but if you don't have

20   the skill and the art of instructional prowess and

21   instructional leadership to understand that this

22   solution is the right solution for this problem,

 1   then you can have chaos. And so sometimes in the

 2   absence of leadership, chaos does reign. And so I

 3   think it's the national conversation, the national

 4   leadership that I know the administration and, you

 5   know, Secretary Duncan and his team are providing

 6   that national leadership that can filter down and

 7   bring the right voices to the right table to have

 8   the right solution to the right problem that we

 9   are hungry for.

10   MS. VOTH: Dr. Abshire, I know you had

11   said that you were not in favor of using E-Rate --

12   to expand E-Rate to cover something like

13   professional development and different software

14   applications. So I wanted to see if you could

15   expand a little bit on the reasons why. And I

16   think you did target some of that already in your

17   presentation, but also to the panel generally,

18   expand upon whether we should target some of

19   E-Rate lending specifically for broadband projects

20   and, if so, how.

21   DR. ABSHIRE: Again, I think with finite

22   resources -- and right now, E-Rate funding is a

1   finite resource and it's oversubscribed. So to my

2   way of thinking, until we have resources that are

3   infinite in terms of broadband and internal

4   connections, and as my colleagues have talked

5   about that exponential growth, robbing Peter to

6   pay Paul to me is not the solution. I don't want

7   to get on my soapbox here, but EETT was the

8   solution for the professional development, for the

9   technology tools, for the software and hardware.

10   And while we in the K-12 community celebrate and

11   applaud the stimulus money that has come to us,

12   we're very grateful, we collectively are

13   disappointed with the 2010 cut to that allocation

14   of $100 million, which is going to devastate most

15   school districts in this country. So I think

16   it's, again, about leadership. And certainly on

17   the national level, that if with the sustained and

18   increased E-Rate funding we can expand broadband

19   with the supply of EETT being raised again, at

20   least to its last levels, then that partnership

21   and alignment of broadband with professional

22   development and tools is the winning combination

1   to help us provide the transformative environment

2   that Chris and, you know, the rest of the

3   colleagues have talked about. And it's going to

4   require leadership from the administration and

5   from Congress, from the FCC and from the

6   Department of Ed, but it's not going to happen

7   overnight and really it's not rocket science.

8   It's financial science. And if we can get those

9   pieces in place, I think we have nothing, but

10   forward-thinkingness and vast improvements to look

11   forward to, but it is a dollars- and-cents game.

12   MS. LOWE: I just would like to echo

13   what Sheryl has to say -- what she just said.

14   E-Rate is already a broadband program and what we

15   need is not a new program, but more in our current

16   program. We have a mechanism that works.

17   We'd like to see E-Rate expanded to help

18   meet the need that we know is coming. There's no

19   question that need is going to increase and we

20   need to be able to meet it through an existing

21   mechanism that's worked for so many schools and

22   libraries.

1   MR. LEHMANN: Just to provide a

2   counterpoint, I mean, I would love to see EETT

3   restored and expanded. I cannot agree more. My

4   single greatest fear is that we will wire the

5   schools, we will do all of this, and we will see

6   no change because we put all of our energy into

7   the technological network and not enough of our

8   energy into the human network. So, if it's E-Rate

9   funding where it has to be, great, but we've got

10   too many places in our country now that have,

11   again, the schools they've always had and a

12   computer lab or two, or a wireless network in the

13   faculty lounge and nothing that reaches the hands

14   of the kids. We need to help teachers and

15   administrators lead schools to become something

16   very, very different than what they have been and

17   that money has to come from somewhere. And if

18   it's E-Rate, I'm okay with that as long as, again,

19   it doesn't cut other -- if it doesn't limit the

20   bandwidth that the schools need. Obviously, that

21   would be counterproductive.

22   MR. GREAVES: You know, bandwidth is

1   going to drive things that we don't even know

2   about today and I think that to -- we're very

3   shortsighted if we take away anything -- do

4   anything that takes away from the actual raw

5   bandwidth.

6   We don't know whether the bandwidth

7   would be best used for professional development or

8   collaboration or access to videos or whatever it

9   is, but we know we don't have enough of it. And I

10   think if we get the bandwidth out there, and then

11   at the local level the schools and the teachers

12   can figure out what the best use of it is. I

13   think that if we start peeling it away, all we're

14   doing is cutting back the amount of bandwidth

15   which is already a crisis.

16   MS. VOTH: Thank you, everybody. I

17   think we just have time for one more question. So

18   we wanted to know what were the trends for schools

19   and libraries that will drive broadband usage in

20   the next 5 to 10 years? Some of have already

21   touched about that and we talked about it in

22   earlier panels, but, for example, would it be more

1   online testing, more electronic communications

2   with parents? Could you tell us a little bit more

3   about that?

4   MR. GREAVES: Well, certainly it's not

5   communications with parents because -- not that

6   there won't be a lot of them, but they aren't big

7   on bandwidth. What would be very helpful not only

8   for -- to answer that question not only for you,

9   but also for the school districts, is that it

10   doesn't exist here as far as I am aware in the

11   country, a five-year outlook about where schools

12   are going to be going, what are the applications

13   they're going to have, and what the bandwidth is

14   per application. And without that, there's no way

15   for anybody to plan because they don't know what

16   their bandwidth requirements five years from now

17   are.

18   But of the ones you mentioned, the ones

19   that are going to drive it -- and have been

20   mentioned today earlier -- it's things like

21   distance learning, virtual education. If Clayton

22   Christensen is right and you take all of the

1   requirements for all the kids that are going to be

2   taking rich courses, that's going to be probably

3   the biggest driver of bandwidth. Assessment is

4   not a big bandwidth driver because it doesn't

5   happen that frequently. When it does happen, it

6   can bring down the system. It's one of those peak

7   load things and so -- and it's one of those things

8   that could be engineered around so that it can be

9   done without needing a lot of bandwidth. But

10   imagine if you were to download a 1 megabyte file

11   for a test times 1,000 students on a standard T-1

12   line that many schools have, it will take you 27

13   hours to download that for every student, so it

14   isn't going to work.

15   So, I think it's -- number one would be

16   the virtual education courses; number two is

17   access to information; number three, the one that

18   you mentioned, is assessment; number four is

19   e-mail and access to parents.

20   MR. LEHMANN: I think for me, if the

21   train that pushes broadband forward is online

22   testing, we will have wasted the single most

1   amazing resource that we have to transform

2   education that we've seen in the last 100 years.

3   The single trend that should drive broadband use

4   is the ability for students to create authentic

5   pieces of learning, network with colleagues and

6   students and adults all over the world, and truly

7   create a transformative environment of our

8   schools. We are at a point now where with the

9   broadband technology, we can stop saying that

10   school is preparation for real life and start

11   saying that school is real life. That's what the

12   broadband technologies allow us to do, and

13   anything that falls short of that is a vast waste

14   of the billions of dollars we've spent.

15   MS. LOWE: I would say libraries are the

16   community anchor institution that people of all

17   ages turn to to really transform their lives. And

18   I spoke to it a little bit earlier about how

19   libraries have responded in the current economic

20   climate, helping people look for jobs, helping

21   people connect with E-government resources.

22   That's going to continue. And moreover, as people

1   come into the library, experience broadband for

2   the first time, demand is going to grow both

3   within the library and within the home. So we see

4   our role as that community anchor institution.

5   There was some conversation earlier

6   about the sort of multiplier effect of driving

7   broadband into communities. E-Rate helped make

8   this possible through libraries as anchor

9   institutions, so we expect that role to grow and

10   also demand to grow.

11   DR. ABSHIRE: I guess I would close with

12   I think the biggest potential is really for

13   broadband to implement how we in schools can

14   differentiate learning. The model "one fits all,"

15   that worked -- you know, or at least got dispensed

16   to us that when I was in school, certainly which

17   was quite a while ago, has changed dramatically.

18   And we know a lot about learning science and we

19   know that children do learn through different

20   modalities, in different times, and in different

21   ways. And so technology has such a powerful

22   potential to really leverage learning for every

1   child so that teachers and instructors can

2   differentiate learning and use different

3   technology tools and strategies to do that. And

4   that requires bandwidth because some children will

5   require different types of technology to learn in

6   their modality.

7   The whole concept of, you know, learning

8   is life, the whole concept of constructivism where

9   children learn and construct knowledge in real

10   time, takes the resources to do that and it is

11   bandwidth-intensive. It's a bandwidth hog to have

12   kids out creating digital video and uploading. We

13   do it every summer in a tech camp for 150

14   students, and the only way we can do it is because

15   everything else in the district is shut down

16   because the schools are closed. And we're amazed

17   that the bandwidth is completely saturated that

18   entire week, all day long, with 150 kids doing the

19   work that 33,000 kids should be doing every day in

20   our classrooms that they can't.

21   So it's that whole thing about

22   differentiating learning. Just the way we as

1   adults want to learn, in our time and in our own

2   style and in our own mode, a five-year- old is no

3   different than we are, they're just a little bit

4   smaller.

5   MS. BROWN: Thank you. I guess this

6   concludes our panel discussion on E-Rate. Thank

7   you very much for taking the time out of your busy

8   schedules to come and share with us and provide

9   your valuable insight. And also thank you to our

10   manager of the E-Rate program, Gina Spade, for

11   organizing this and getting it all together for

12   us.

13   The discussions here will be part of the

14   record for the National Broadband Proceeding.

15   However, you're welcome to contact us as well and

16   submit written comments with the Commission.

17   (Whereupon, the PROCEEDINGS were

18   adjourned.)

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 1              CERTIFICATE OF NOTARY PUBLIC

 2              I, Carleton J. Anderson, III do hereby

 3      certify that the forgoing electronic file when

 4      originally transmitted was reduced to text at my

 5      direction; that said transcript is a true record

 6      of the proceedings therein referenced; that I am

 7      neither counsel for, related to, nor employed by

 8      any of the parties to the action in which these

 9      proceedings were taken; and, furthermore, that I

10      am neither a relative or employee of any attorney

11      or counsel employed by the parties hereto, nor

12      financially or otherwise interested in the outcome

13      of this action.

14                    /s/Carleton J. Anderson, III

15

16

17      Notary Public in and for the

18      Commonwealth of Virginia

19      Commission No. 351998

20      Expires: November 30, 2012

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