EDUCATING FOR THE 21ST CENTURY: BRINGING TODAY'S CLASSROOMS INTO THE DIGITAL AGE

FIELD HEARING

OF THE

COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS

UNITED STATES SENATE

ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

ON

EXAMINING EDUCATING FOR THE 21ST CENTURY, FOCUSING ON
BRINGING TODAY'S CLASSROOMS INTO THE DIGITAL AGE

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NOVEMBER 22, 2013 (Charlotte, NC)

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Printed for the use of the Committee on Health, Education, Labor, and Pensions

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FRIDAY, NOVEMBER 22, 2013

U.S. SENATE,
COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS,
Charlotte, NC.

The committee met, pursuant to notice, at 2:18 p.m., in the Media Room, Phillip O. Berry Academy of Technology, Hon. Kay Hagan presiding.

Present: Senator Hagan.

Dr. CARROLL. Good afternoon. My name is Dr. Curtis Carroll. I'm the principal of Phillip O. Berry Academy of Technology. It is an honor today to have U.S. Senator Kay Hagan here today. It is really exciting as the principal of this school to hear your remarks earlier and the emphasis you put on history and knowing your history, because as of this moment, 1 hour and 50 years ago, one of the greatest Americans of all time was assassinated.

So it's ironic for me to have you here to talk about education and technology, because our former president was all about technology, dating to 1961, when he made that great speech in March about "We will put a man on the moon," and then in 1969, 6 years after he was assassinated, to have someone actually step on the moon. I know, better yet, I believe that we have some individuals in this room today, students that are going to make a change in our society.

But I only have 3 minutes, so I would be remiss if I did not introduce our great school board. I say that because I have a personal relationship with our school board. The first person I would like to introduce is our chair, Mary McCray. We also have Ericka Ellis-Stewart, who has a daughter here at Phillip O. Berry; Dr. Joyce Waddell; Amelia Stinson-Wesley; and Tom Tate.

Anything that we could do to make your stay here today—we will be here. Mr. Hall, my administrative assistant, is here. If there's anything that you need, we will be here to help you.

We'd also like to recognize all of our distinguished guests. Have a good day.

OPENING STATEMENT OF SENATOR HAGAN

Senator HAGAN. Dr. Carroll, I thank you so much. It is such an honor to be here at the Phillip O. Berry Academy. I appreciate everybody else being here, too.

I want to make an opening statement, so I'm going to stand up. Can you hear me?

The Senate Committee on Health, Education, Labor, and Pensions will come to order. This is an official hearing that we are hosting outside of Washington, here in North Carolina, on behalf of the Senate Committee on Health, Education, Labor, and Pensions.

Just as Dr. Carroll said, before we begin, I do think it is fitting to take a moment to remember the life of our former president, John F. Kennedy, on the 50th anniversary today of his tragic assassination. He led our Nation during a time of rapid cultural and technological change. And as we discuss new ways to use technology in the classroom, we should remember his ambition, his drive, and we should let it inspire us to achieve more than we thought was possible for the good of our students and for the good of our country.

Dr. Carroll, Dr. Morrison, thank you for graciously hosting us here today at the Phillip O. Berry Academy of Technology for the hearing. When I stepped into the school from outside, some of the Junior ROTC members welcomed me to Phillip O. Berry, that was great, and it is an honor to be here.

I really want to say thank you to the Junior ROTC students and the executive council students, who so graciously welcomed not only me, but all of the guests that are here this afternoon. I saw a lot of the Junior ROTC students all over the campus as we've been walking through.

And, of course, I want to thank all of the witnesses that are here for sharing your thoughts and for your valuable insight. We are lucky to have such dedicated and talented school leaders, educators, and students joining us.

The school board and county commissioners, thank you for being here. It is the people here on the ground that know the local society, the local people, and what works best for your local community. Thank you for being here today; and also, for your activity and your involvement in the school system.

We've really got some extremely bright students here. I've met a number of them already when we had a little time to get together, and I really look forward to the students' comments that are on the panel today.

Please know, I'm not only a Senator, I'm also a mother of three. Please know that everything that we do on this committee is for you, the students, and for the future. And I encourage all of the students to keep up the excellent work.

There's no better place than here in North Carolina to be having a hearing on education technology. Our State has long been a leader in education innovation, going back to 1795, when we in North Carolina opened the doors to the first public university in the country. There were the Princetons and the Yales, but they were private schools. North Carolina had the first public university in our Nation. I think everybody in North Carolina should know that and should take great pride in it.

We've also recently taken a leading role in using 21st century technology in the classroom. Eight years ago North Carolina implemented a plan to transition our K–12 public schools to a digital

learning environment. Every one of our 2,600 current schools have access to high-speed broadband Internet. We have better connectivity, and we have faster Internet in our classrooms than any other State in the Nation.

Ensuring that North Carolina is ahead of the curve in connecting our students with the latest technology has long been a priority of mine, dating back to when I served in the State Senate. I served 10 years in the State Senate. In 2006, we established the State's first virtual public school to help meet North Carolina's constitutional requirement to provide every child a sound basic education. As co-chair of the Budget Committee at that time, we helped invest $40 million in the school connectivity initiative to expand the number of public schools that had broadband connectivity.

Across the country, people look to North Carolina as a leading State in improving student performance with the help of technology. I look forward to hearing from Scott Smith and Dale Miller about the interesting and fascinating results that they're seeing in Mooresville. They now rank third in our State in student achievement, jumping up from the bottom quarter just a few years ago.

Mooresville's graduation rate has increased 25 percent in 5 years. Most impressively, they have accomplished this with one of the lowest per pupil expenditures in the State, currently ranking 99th out of 115 districts.

The Montlieu Academy of Technology, which is an elementary school in High Point, was previously designated a low performing school. Students there have made impressive academic gains by using tablet computers and interactive software where they're learning at their own pace. Since starting the digital learning program, students at Montlieu have achieved a 9 percent gain in literacy, an 11 percent boost in math, and a 25 percent gain in science.

I, personally, have been to Montlieu, a K–5th grade school, and I've experienced being in the classroom. Seeing these young people being able to use technology, teaching their parents, in many cases, about how they're going to do their homework, it's incredibly impressive.

These examples are numerous in our State. We understand that students need 21st century tools if they're going to compete in today's 21st century economy. Our schools are making outstanding progress, but we all know we still have work to do. We've got to ensure that every student in North Carolina and across the country has access to cutting edge technology.

According to the FCC, half of America's classrooms today have slower Internet access than the average American home. So the schools have much less access than the average home. Only 10 percent of schools have the bandwidth necessary for high quality digital learning.

Our Federal education law that directs States, districts, and schools on how to implement technology—I'm astounded to tell you that it is 11 years overdue for reauthorization. The law that is telling States what they need to do is 11 years overdue. I'm incredibly frustrated at the gridlock that has prevented progress on this bill.

I introduced a bill this year to update and modernize the outdated technology law. My bill would give States more authority to

use funds to improve technology infrastructure and to train teachers and principals on how to best incorporate new technology in the classroom. I think we all know here, especially the faculty, that you have to provide training for the faculty in order to transmit these learning tools to the young people.

Providing professional development for educators is a key component of this bill. Teachers will have the support they need to use the new technology to redesign curricula to be most effective for students. This bill will also authorize States to access local needs for using technology and authorize funding for districts that are furthest behind.

It also includes a competitive grant for districts and schools that have already excelled in incorporating new technology to continue pushing their programs further. So just because they're doing a good job, this isn't going to punish them.

Too many schools across the country, both urban and rural, are dramatically behind in implementing technology. This puts the students in these very rural areas behind their peers as they move to college or to a career. It's hard to think of a career today that does not require a basic understanding of technology. In manufacturing, which is one of our State's most important industries, we are seeing a shift from relatively low-skill assembly line positions to more high-skill jobs.

Companies such as GE Aviation in Wilmington, NC, are looking for employees trained to operate computerized equipment and sophisticated machinery. In Charlotte, Siemens needs employees with laser and robotics training in order to work in their gas turbine factory.

In order to prepare our young people for the 21st century careers, we know we have to bring their classrooms into the 21st century. Every school needs to be online with access to computers and to tablets and high-speed Internet connection. And we've got to give our outstanding educators the training they need to use this technology.

Every child, whether sitting in a classroom in Charlotte or in Tarboro, NC, deserves the same opportunities for success. We've got an important opportunity to achieve these goals with passage of my education technology bill. I am proud that our State leads the country in education innovation, which enables me to really bring this committee here to Phillip O. Berry Academy to learn more about the technologies that are helping our students be successful now and into the future.

I want to take the findings that we discuss today and replicate these models around the country to ensure that every child is learning in a 21st century classroom.

Now, I would like to introduce our witnesses that are here on the panel.

First, we have Scott Smith, who is the chief technology officer for Mooresville Graded Schools, one of the only public school systems in the Nation to issue laptops to every child in grades 4 through 12. We also have Melissa Thibault, the vice chancellor for Distance Education and Extended Programs at the North Carolina School of Science and Mathematics.

Then we'll hear from Dale Miller, on my left, a high school student from Mooresville High School. And then Raha Obaei, a 6th grade teacher from Kennedy Middle School.

Following Raha will be Eric Graham, a high school student from right here at Phillip O. Berry Academy, and then Sean O'Leary, a 5th grade teacher from Hawk Ridge Elementary. And last but certainly not least, Mazzanni Burnett, an 8th grade student at Kennedy Middle School.

Scott, we're going to begin with your testimony.

And to all of you, because of time constraints, please limit your remarks to 5 minutes. Once each of you has concluded with your remarks, we will begin the question and answer period of the hearing.

Mr. Smith.

STATEMENT OF SCOTT S. SMITH, CHIEF TECHNOLOGY OFFICER, MOORESVILLE GRADED SCHOOL DISTRICT, MOORESVILLE, NC

Mr. SMITH. Thank you, Senator Hagan. Thank you all for having me here. I am very proud to be the chief technology officer with Mooresville Graded Schools just north of here, about 30 minutes north.

In 2007, Mooresville Graded Schools launched a digital conversion. This conversion was to meet the needs of all students, no matter where they come from, what their socioeconomic background is, or what their family situation is. We wanted to level the playing field for all students. The way that we did that was putting a laptop in the hands of every single student.

I am the technology guy. I get into all the gadgets, but I'm also an educator. My passion is curriculum and instruction, and that is the passion for what is going on in Mooresville. It's a technology project, but it is about changing the teaching and learning environment, and it is about doing what's best for kids.

We are now in our sixth year of doing this. It really has been quite an experience. When you think of putting laptops in the hands of 4,000 kids, it's quite an undertaking. But it's been the most rewarding thing that we have ever done as educators in Mooresville.

You mentioned, Senator Hagan, about the broadband access and having access to the Internet. That has been vital to our success in making things happen in Mooresville. We have very strong networks, in terms of wireless connectivity and access to the Internet.

My philosophy on that is kind of like the movie, Field of Dreams. If you build it, they will come. And students use every bit of bandwidth that you give them. It's been a great learning opportunity for us.

The environment that we have created in our classrooms is that of those 21st century skills that you mentioned, Senator Hagan, about creativity, communication, critical thinking, and collaboration. You walk into one of our classrooms, and there's this hum that is going on of kids interacting with each other, working on project-based learning, new types of skills, instead of the teacher lecture type that we all probably grew up with. Those types of things don't exist in Mooresville like they used to in the past.

You also mentioned professional development. That has been one of the biggest things that we have emphasized since the onset. We actually gave teachers laptops first, long before we did students, and that was so that we could work with our teachers to—they didn't grow up with this. So it's new for them, and they're learning. We spent extra time with them.

We have a summer institute for our teachers to come to. It's completely voluntary. But I'm very proud to say that this past summer, 92 percent of our teachers came to our summer institute.

On top of that, our local school board has been so supportive of our efforts. They have given us 11 early release days. We basically have one a month. Teachers stay all day. Students go home at noon, and teachers attend professional development and training in the afternoons. That has been vital to our success. That way, we're not doing it after school, and we're not doing it on Saturdays. The school board was instrumental in making sure that that happened for us, and we are extremely grateful for that.

The impacts that this has had in Mooresville—there's the anecdotal stuff that you see. You walk in and you see student engagement, and kids are very involved in what's going on. They're working on their activities and projects. But for the hard data, as you mentioned, Senator Hagan, our graduation rate is up, and our dropout rate is down. Student discipline is way down. And when you don't have to deal with student discipline, you can deal with more things that are more important, like curriculum and instruction and professional development and those types of things.

This has also been an economic engine for our community. We work with the Chamber of Commerce. We work with Economic Development on doing what's right for our students and what's right for our community. So it has actually increased our enrollment. We're having more people move into our district because of this initiative. So it's really been an economic change agent for our district.

We have visitors who want to come to Mooresville to see what we're doing. So that in itself is an economic advancement. The hotels in town love us. But it's been a great thing. I think one of the crowning things for us is that President Obama chose Mooresville Middle School to come to last June to announce his initiative, ConnectEd, to bring that high-speed Internet to every school in the Nation, and we're extremely proud of what has happened in Mooresville.

Thank you.

[The prepared statement of Mr. Smith follows:]

PREPARED STATEMENT OF SCOTT S. SMITH

OVERVIEW OF MGSD'S DIGITAL CONVERSION

MGSD's Digital Conversion program is a one-to-one (1:1) laptop program. The goal of this initiative is to integrate mobile technology with research, multimedia projects and three-dimensional learning. In 2007, Dr. Mark Edwards, superintendent shared there was a significant digital and economic divide. There were students who had access at home to technology and resources, and some who had none. That was a real driving component for the digital conversion to create equity of opportunity for all.

Five-thousand MacBook® laptop computers have been deployed to every student in 3d–12th grade as well as nearly 500 licensed educational staff across the district. The driving concept has been to have students "own" these district-provided devices

during the full school year, taking the devices home after class and bringing them back in the morning for classroom use. Educators and learners alike have access to these instructional tools 24/7 for all 180 school days. This program is innovative on many levels; for many Mooresville students, the school-issued laptops are the first that their families have "owned." Integrating laptop computers has significantly enhanced the level of student interest, motivation and engagement in learning. The laptops provide students and staff with constant access to classroom materials and multimedia tools, supplementing classroom learning.

STUDENT FOCUSED

Throughout the Digital Conversion program, MGSD is living its motto: every child, every day. By providing equitable access to technology to every child, MGSD has all but erased the "digital divide" faced prior to the initiative. In a district where the free and reduced rate rose to 40 percent in 2011, providing technology for every child has been a win-win for the students, school system and community at large. Additionally, enabling each child with the transformative power of technology makes learning relevant and hugely centered on each student's individual needs.

MGSD has made a concerted effort to become as student-focused as possible, promoting classrooms that inspire and engage students of all ages. Through challenge and project-based learning, students demonstrate transformative learning on a daily basis—moving beyond mere proficiency in both scope and depth. Through the Digital Conversion program, teachers have consciously evolved into instructional facilitators, allowing students to become the focus of learning and teaching. This individualized instruction has been met by parents and constituents with great enthusiasm. All parties want what is best for their child and this environment makes it possible. The communication to parents is enhanced through out the year and especially during deployment of the laptops where administrators share with parents what this means for their child.

Perhaps the most profound impact of MGSD's digital conversion on student success cannot be measured quantitatively. It is only by stepping into a Mooresville classroom and observing the learning in progress that the true value of technology integration and student engagement on MGSD students is apparent.

PROFESSIONAL DEVELOPMENT

MGSD has made professional development for our teachers and staff a focal point of the digital conversion. We organize, plan and implement an annual summer institute for teachers and engages in 10 early release individual professional development days throughout the school year to empower teachers to master technology in a way that benefits both them and their students. We are very involved in ongoing, sustained and targeted professional training that occurs throughout the district. These sessions are led by technology facilitators, media specialists, teacher leaders, and outside vendor partners. MGSD's administrators and teachers are making the leap as digital immigrants to connect with the digital natives—our students.

MGSD teachers have worked to create a curriculum framework that fully uses and embraces the use of technology and digital content. This "shift" to digital resources has been a long yet rewarding process as students are now more engaged in the classroom experience and have the most up-to-date and relevant resources and information at their fingertips.

Teachers and administrators have formally integrated digital software into classroom instruction. Specifically, teachers use an online learning management system that includes Web 2.0 tools. Web 2.0 instructional resources are used every day in classroom instruction. These tools include, but are not limited to, blogs, discussion forums, wikis, chats, and e-mail. The use of digital tools at MGSD has carved the path for an open, shared learning environment across its eight campuses, fostering collaborative two-way learning. Creative materials are converted to a digital platform and then shared with other students, teachers and parents across the district, involving the whole community in students' creative expressions.

Because MGSD has made technology a key tool for education, teachers are now viewed as collaborators by their students. Instead of educators dictating what they want their students to know, teachers have become facilitators, allowing students more freedom to discover and explore. It is a simple and poignant change, shifting the focus away from the teacher and toward the student.

REPLICABLE BLUEPRINT FOR SUCCESS

Since 2009 MGSD has hosted over 3,000 visitors from approximately 40 States. They come to inquire about how MGSD has had such great success and how they

can replicate what has occurred. Many districts have duplicated MGSD's model and are starting to see similar results. Avery County, NC; Rutherford County, NC; Piedmont City, AL, and Baldwin County, AL are just a handful of MGSD success stories.

In addition, MGSD plans a summer connection for other school districts to bring teams of people for an inspiring and enlightening 3 days of training. During the 3 days we offer strands for: superintendents & district administrators, school-based administrators, technicians, and teachers. MGSD organizes content specific training for teachers, strategic and logistical planning assistance for administrators, and all-important training for technology department staff.

IMPACT ON LEARNING

While there are plenty of schools where technology initiatives have made a difference on a small scale, district-wide successes are harder to identify. MGSD is an example of district wide success that is a direct result of commencing the Digital Conversion program. In 2012 MGSD was tied for second in North Carolina's "Schools of Distinction" ranking. MGSD as a whole continues to improve in this ranking, having started at 38th (out of 115) in the first year of the digital conversion. In total, this marks a 16 percent growth in achievement ranking.

What is particularly remarkable about this achievement is that MGSD is one of the two lowest per pupil expenditure districts out of the Top 10 districts, and the lowest per pupil expenditure district in the Top 7 ranked districts. In addition, MGSD enrolls more than double the amount of students than the district tied for second, and double the students of the district in third place. Despite MGSD's economic disadvantages, the district demonstrates real positive results.

Students' test scores across individual schools and subject matter (e.g., mathematics) have continued to increase with every passing year of the Digital Conversion program. Mooresville High School, End-of-Course (EOC) composite exam data reveals an increase of 23 percent since the start of digital learning. This trend is replicated across age groups as well. For MGSD third graders, students' reading, math and composite EOC scores have all improved significantly over the past 4 years. Likewise, for Mooresville Middle School, EOC composite test scores improved to 87 percent in 2012, marking a 15 percent growth since 2007.

Another exciting result of the Digital Conversion program has been the increase in graduation rate and simultaneous decrease in dropout rate and increase in college going rate for graduating students. In 2011, MGSD was second in North Carolina for graduation rate, having improved from a 77 percent graduation rate in 2007 (the first year of digital conversion) to a 91 percent graduation rate in 2011.

Simultaneously, the Mooresville High School dropout rate has decreased by 48 students per year since 2005 (pre-digital conversion) and the college going rate of Mooresville graduates has increased by 12 percentage points since 2006.

PUBLIC/PRIVATE PARTNERSHIP

MGSD staff, students, and community at large are fully invested and immersed in this project. Likewise, these stakeholders are committed to the program's development, enhancement and evolution. As demonstrated by the funding for the Digital Conversion program, the community has repeatedly supported and responded to calls for monetary contributions toward this initiative. In addition, the community has buy-in in the initiative through continued support. One small example is that all the local businesses, through the work of the Chamber of Commerce and Economic Development, have agreed to have free Wi-Fi in shops and restaurants. Students know they can travel almost anywhere downtown and get online to access resources. In a unique collaboration between MGSD and the Town of Mooresville, they have supported the digital conversion. As a result all public/town-owned facilities like the public library, fire departments, police stations and public parks WiFi is available! Most notably, in August 2013 the local Internet service provider MI-Connection announced free Internet access for any 4th–12th grade student in MGSD that qualifies for the national free and reduced lunch program.

The MGSD board of education has and continues to provide strategic leadership, policy change and direction for the digital conversion initiative. Through the original 2008 Strategic Plan and subsequent 2011 revision these stakeholders helped guide and provide supporting policy to ensure the sustainability and longevity of the Digital Conversion program. For example, 4 years ago, MGSD had a standard acceptable use policy (AUP). However, with the onset of this technology initiative and increased digital requirements, MGSD decided that the district AUP was no longer adequate and should include extended legal ramifications. Subsequently, in 2008 the MGSD board of education decided to support the change from an AUP to a required use policy (RUP), which includes more stringent policies surrounding technology.

This is an example of the board of education instilling support and security surrounding the technology in use at MGSD.

In 2011 MGSD was invited to speak at the White House for the "Digital Promise" about the need for digital access and resources for all students. Digital Promise is a new public/private partnership aimed at accelerating the inclusion and access to new education technologies for schools, including the formation of a "League of Innovative Schools" that represents best practices. MGSD was invited to join the League of Innovative Schools, and in fact hosted the League's first meeting.

MGSD has been identified as a "lighthouse district" for technological success at the national and State level. This year, MGSD was accepted into the highly competitive Consortium for School Networking Leading Edge Cadre. At the 2012 Digital Learning Day events, MGSD hosted one of only four live video feeds shown nationwide. And as a crowning achievement, in June 2013 MGSD was host to President Obama where he announced his new platform "ConnectEd" to get high speed Internet to every classroom in the country!

Senator HAGAN. Thank you, Scott.

Melissa Thibault.

STATEMENT OF MELISSA RIHM THIBAULT, VICE CHANCELLOR FOR DISTANCE EDUCATION AND EXTENDED PROGRAMS, NORTH CAROLINA SCHOOL OF SCIENCE AND MATHEMATICS, DURHAM, NC

Ms. THIBAULT. Thank you so much. It's a pleasure to be here.

The School of Science and Mathematics is a residential school in Durham. But ever since it was founded over 30 years ago, we've known that sharing what we do is really, really important. It's a part of our mission from the onset. The investment that the State has made would make its greatest return if we could serve students, not only from every congressional district statewide, but also improve public education statewide.

We have been very cognizant of the fact that to those who much is given, much is expected. And the school has, since its inception, embraced that public education improvement aspect of its mission. We have a particular challenge going forward. But technology and distance education allow us to challenge the limits of what's possible in public education.

Before the rise of the Internet—I know some of you may not remember that. Some of the children who are in here have never known what that was like. But for 20 years, we have been doing distance education through video conferencing. Our video conferencing program is two-way interactive video conferencing with a very high level of engagement.

Here are these courses that you can come to the school in Durham and take, but they're also available to you in remote areas, rural areas. It leverages the State's strategic development in infrastructure. Senator Hagan was talking about the information infrastructure that we have in the State, which is unparalleled. We are so fortunate to have the information highway which became NCREN and now working toward last-mile connectivity with MCNC in order to make sure that everyone has the bandwidth they need to get the information that they need in their homes and schools.

Telepresence used to be really expensive. But now we're helping schools set up situations where students can take courses with an $80 web cam and $60 speakers, and they can participate in our courses. We have 16 high-level courses taught through video conferencing, including AP Calculus and AP Statistics, Genetics and

Biotechnology, Aerospace Engineering—which I saw some of the eyes light up among our ROTC folks here.

You can just think about what a benefit this is, particularly in small schools, rural schools, coastal schools. Before, if there were three students ready for an advanced course, like an AP Calculus course, those three students, because of staffing needs, may have gone unserved. But now, with the program that we have in place, those students are able to take high-level courses.

There's a young woman named Taylor who went to Cape Hatteras High School. She told State legislators last year that if she didn't have pre-calculus and AP statistics from the School of Science and Mathematics, she would have run out of math at her school at the end of her sophomore year. Taylor understood that to be competitive in college, you need more mathematics, and she's now at NC State.

That is echoed by a young woman, Madison, who is a senior at the Union High School in Sampson County. Madison would have run out of her courses in her junior year, but she wanted to take more mathematics, more than she was required to take, and we made that possible for her.

Now, we're part of the UNC system, and so applications to our residential program continue to be on the rise. We have to use technology to serve more families in North Carolina. So in 2008, we launched an online program. NCSSM Online is a very unique blended program. Much of the course work is delivered online, but there is a component of residential in summers and on weekends when students come in to do some of their work, do labs, and work in conjunction with their peers.

We have 26 courses, which are some of the most advanced courses in the State, including topics beyond AP, like Multivariable Calculus or Applied Chemistry and Engineering. We have 241 students in that program. Among the most academically advanced in the State, they come from small schools and large 4-A schools. We are supplementary to their academics.

For example, Juan, a senior at Green Hope High School in Raleigh, will leave that school having completed a four-semester sequence in computational science, including Bioinformatics and Computational Chemistry; a summer course in Primate Ecology; field research on Endophytes, which I had to look up; and a summer research experience in a lab at NCSU that is looking to turn cockroaches and moths into bio-bots to aid in disaster recovery, all in addition to the courses he's taking at his local high school.

NCSSM recognizes that developing digital video and digital courses gives us a tremendous amount of legacy products. Therefore, we make materials available for sharing online and have for more than a decade. In our repository of STEM@NCSSM and YouTube channel, we already have a million hits from teachers that are using our high-definition cat dissection or virtual labs that we have in place that they can use at their convenience. These materials really leverage the investment the State has made in our school.

These efforts did not spring up overnight. They are the result of strategic continued investment in our school, as well as a recognition that if you work in Durham, you can have a profound effect

from Murphy to Manteo. Our State has been very insightful in investing in the school, as well as in the infrastructure that we are taking advantage of.

[The prepared statement of Ms. Thibault follows:]

PREPARED STATEMENT OF MELISSA RIHM THIBAULT

From the time the North Carolina School of Science and Mathematics opened in 1980, we have always made it a part of our mission to share what's happening on our 680-student residential campus. From the earliest days of the school, NCSSM faculty and staff understood that North Carolina's investment in the Nation's first public, no-cost residential school focused on mathematics and science would have its greatest return if it served not only students from every North Carolina congressional district, but if the school also made the statewide improvement of public education through outreach a part of its mission.

We began this work before the rise of the Internet when we began offering our high-level mathematics and science courses to low-wealth and rural high schools through interactive video conferencing. Now in its 20th year, our two-way, interactive video-conferencing course program leverages the State's strategic development of infrastructure, using the Information Highway and later NCREN, as well as the last-mile connectivity efforts that MCNC continues to this day. Where telepresence was once expensive and technically complicated, we are now helping schools set up $80 web cams and $60 speakers to begin participating in 16 advanced courses like AP Calculus AB and AP Statistics, Genetics and Biotechnology, Forensic Material Evidence and Accident Investigation, and Aerospace Engineering, where we serve about 450 students each year.

Think of what a benefit this is to small schools, particularly in coastal or deeply rural areas. Before digital learning, if they had three students ready to participate in an advanced course like AP Calculus, their staffing demands meant that those three students probably weren't served. We had one young woman, Taylor, at Cape Hatteras High School tell State legislators last fall that if she hadn't had the chance to take pre-calculus and AP statistics through NCSSM, she would have run out of math at her high school after her sophomore year. Taylor understood that in order to be competitive in college, she would need more mathematics, and is now at NC State. This thought was echoed by Madison, a senior at Union High School in Sampson County, who said that she had taken all of the math courses available at her school by the end of her junior year and was still hungry for more.

Now that we are a part of the UNC system, applications to our residential program are steadily on the rise, so we have used technology to serve more families. In 2008, we launched NCSSM Online, a blended program that combines online coursework with time on campus during selected weekends and the summertime. Our 26 online courses are some of the most advanced in the State, with topics beyond the Advanced Placement curriculum like Multivariable Calculus, Applied Chemistry and Engineering.

The most academically advanced kids from high schools across the State—the smallest rural schools up to some large 4-A high schools—are among the 241 students taking advantage of NCSSM Online to supplement their academics. One student at Green Hope High School in Raleigh, Juan, will leave NCSSM's Online program this year having completed a four-semester sequence of computational science courses including Bioinformatics and Computational Chemistry, as well as a summer course in Primate Ecology and Evolution, a field research course focused on Endophtyes, and a summer research experience with a lab at NC State that is working to turn cockroaches and moths into bio-bots to aid in disaster recovery. All of this is in addition to the courses he's taking at his local high school.

NCSSM also recognizes that developing video and digital courses gives us a tremendous number of legacy products we can share. Through our STEM@NCSSM repository and YouTube channel, we have already shared materials developed in our residential and virtual programs with schools and teachers across the State over 1 million times. In collaboration with the Department of Public Instruction, we have developed and distributed digital content and full curricula that include virtual labs, interactive content, even a full high-definition cat dissection.

These efforts didn't spring up overnight. They are the result of strategic, continued investment in our school and the recognition that the work we do in Durham can have a profound effect from Cherokee to Currituck Counties, from Murphy to Manteo.

Senator HAGAN. Thank you. I think a lot of people don't understand that North Carolina has the School of Science and Math, which is a boarding school, 11th and 12th grade. And they have to accept students from all 13 congressional districts across our State. It is a free boarding school, and it is something—how many students are there now?

Ms. THIBAULT. We have 680 in residence, and we serve more than 700 in our distance education program.

Senator HAGAN. We'll ask questions later. But I do think it's important that people realize this is a public school that does have resources like this available to students all across North Carolina.

Dale Miller, a high school student from Mooresville.

STATEMENT OF DALE MILLER, HIGH SCHOOL STUDENT, MOORESVILLE HIGH SCHOOL, MOORESVILLE, NC

Mr. MILLER. First, I'd like to thank you and all the staff here at Phillip O. Berry for having us today. It's an incredible honor. So thank you very much.

Just to go off what Dr. Smith said, I'm the student aspect of what his brain child is here. But incredibly significant things have happened since Mooresville decided to go digital.

Senator HAGAN. I don't mean to interrupt you, but how long have you been there?

Mr. MILLER. Yes, ma'am. I've actually been there since 2d grade. So I've been there throughout the whole conversion.

Senator HAGAN. Great.

Mr. MILLER. I was in the 8th grade when every student in the district got these laptops to take home every single day for their educational use. Like Dr. Smith touched on, every teacher was trained to convert their old teaching style into what was going to be implemented in the classroom every day, as far as laptops, to help us get a feel for it, because we were very thrilled to get them. We were really, really bright-eyed to be able to receive these laptops.

We realized that it wasn't necessarily the machine that was given to us. It was an education. We weren't fully aware of what that meant. But we were fully aware that our district opened a new door in the field of education, and we were all prepared to create our own unique and individualized path. I'm going to go in-depth on that.

I think when asked, the largest effect that the digital conversion has on us is that our students are independent. It's truly astonishing how many possibilities are opened up through the technology that we have. And when asked to complete a project on any given topic, I think students in my school are really set free. It sounds weird when you think about it that way, but it's a liberating thing, because our possibilities are endless.

I actually have an example. All seniors at my school, Mooresville High School, must complete a senior project to graduate from school. It epitomizes every single aspect of the technology we're given.

First, we're given a topic. We can pick our topic. That's the individualized learning that we're doing. We get to choose our topic. We have to write a research paper. We use our MacBooks to do

that as well. We correctly cite our sources. We learn how to do that.

All college-level skills we need to be able to do, whether or not we learn it in high school, or we have to adapt in college. I think it's important that we're learning that now, as opposed to being thrown into the wild next year. It's always a good thing to be able to do that.

So we choose our topic. We're individualized about that. Teachers love to see all kinds of crazy things going on. But we get to do that. We document all of our—we have 15 hours of service we have to do with that project, whatever it may be, and we document those hours with our MacBooks.

We're also asked to create a product. That can be anything. Like I said, it's pretty individualized, and we can do what we'd like to do. So a lot of people choose to make their own videos or brochures, all using the laptops. That's something I think is really important, because they have that freedom to be able to do what they'd like to do. And I think that opens a lot of doors, as far as technology goes, in every school, and that's also important.

So what exactly do I mean by that individualism? I would say that, quite frankly, I'm confident that the technology given to students all throughout the district in Mooresville Graded Schools is making them more and more apt to succeed in college, not necessarily getting into college, but succeeding in college. And I think those are two different things.

No longer is it the teacher's job when you get to college to rely on how well we do. They're there no matter what. We have to adapt to that. They're not holding our hands anymore. We're not just there. We have to make an impact, and I think Mooresville allows us to get that individual sense that we can do that much more quickly and much more effectively than most other schools do with the technology we're given.

Although Mooresville Graded School District is pioneering that push for educational technology, it's definitely not the only one that realizes the benefits of it. I myself am surrounded by students every single day who love to push themselves, and sometimes I don't even realize how motivated our students are based on what we have. I attribute that attitude that really benefits our system to the digital conversion. Without that, we wouldn't be—not necessarily the school district that we are, but as highly pushed and motivated as we are. Without the digital conversion, I don't think any of that would be possible.

Therefore, I'm not alone when I say that with the tools given to me by my school district, I am well on my way to success, not just success in the world of education and learning, but the world that comes soon after and lasts a lifetime.

[The prepared statement of Mr. Miller follows:]

PREPARED STATEMENT OF DALE MILLER

PERSONAL PERSPECTIVE OF MGSD'S DIGITAL CONVERSION

Incredibly significant changes have been brought about by MGSD's decision to go digital. I was in the 8th grade when every student in the district, from 3d to 12th grade received the privilege to take a laptop computer home for educational use every day. Little did I, or my peers, know that the machines we would be using would shape our educational lives forever.

Each of MGSD's teachers had been trained and familiarized with the technology prior to the students getting devices of their own. This enabled us as students to enter the conversion with a sense of direction and guidance. As you can imagine, each and every student was thrilled to be given this opportunity, and quickly learned how to correctly and efficiently use the machines. We were fully aware that our district had opened a new door in the field of education, and we were all prepared to create our own unique path.

MONUMENTAL ADVANTAGES ATTRIBUTED TO THE CONVERSION

Of course, MGSD's Superintendent, Dr. Mark Edwards, set the educational advancement of the students as his first priority in the conversion. As previously imagined, students and teachers alike would now be capable of going online from their individual laptops and browsing the worldwide web for resources. Credible and interactive educational Web sites such as Education Portal and Khan Academy can easily be accessed since the conversion, and many teachers and students do use organizations such as these to further their learning.

If a student is struggling with a particular topic, he or she can now easily email their teacher and ask for assistance. Whether the students are on vacation, holiday breaks, or simply at home for the evening, they can reach their teacher via email with the technology given to them. This has been an incredible help in my personal education, as I have never been one to shy away from asking questions. The e-mailing route allows a student to receive one-on-one instruction with his or her teacher with the flexibility of time and location.

Apart from getting additional help on a given subject, the digital conversion within MGSD has even broadened the already vast array of courses offered. Many of my colleagues take courses online, and are linked with virtual schools around the Nation. If a particular class is not offered at my particular high school, the digital conversion allows a student to explore their interests and take that class online. Not only does the student get the personalized education they deserve, but they are also being connected with instructors and students nationwide.

LASTING EFFECT OF THE DIGITAL CONVERSION

When asked about the largest effect that the digital conversion has on students, the first thing that comes to mind is independence. It is truly astonishing how many possibilities are opened up through technology such as that throughout Mooresville Graded School District. When asked to complete a project on any given topic, students in MGSD are, in a sense, set free. There are countless options and combinations of applications, Web sites and learning tools at that student's service, that a project is almost a liberating assignment. I feel that it is this attitude toward learning matched with the tools given in MGSD that makes for successful students, and successful lives.

What exactly do I mean by that? Well, quite frankly, I am confident in saying that the technology given to Mooresville High School students, in particular, makes them more apt to succeed past MGSD, and into colleges nationwide. All high schoolers must face the reality that college isn't quite the same as what they have been accustomed to for their K–12 educations. No longer does the teacher's job rely on how well the students do. No longer does he or she hold students' hands and give them an easy way out. College students are, and must be, independent learners who are willing to accept just that. They realize that their learning style, and similarly their education, is different than that of their peers.

Technology simply opens the doors to this sense of realization. The sooner a student can understand his or herself and learn on their own terms, the sooner that student will taste success. Instead of being deprived of individuality and expression, students in MGSD are encouraged to take their educations to the next level and create their own path.

Although Mooresville graded school district is one that is pioneering the mass addition of technology to education, it is certainly not the only one that recognizes the benefits. Without even realizing it, I myself am surrounded by students who love to push themselves to achieve more, and have become more independent in doing so. I attribute this solely to the digital conversion. MGSD did more than hand students laptop computers, the district allowed kids to experience the most beneficial and exciting side of education. Therefore, I am not alone when I say that with the tools given to me by my school district, I am well on my way to success. Not just success in the world of education and learning, but the world that comes soon after and lasts a lifetime.

Senator HAGAN. Thank you very much, Dale.

Ms. Raha Obaei, 6th grade teacher at Kennedy Middle.

STATEMENT OF RAHA OBAEI, 6TH GRADE TEACHER, KENNEDY MIDDLE SCHOOL, CHARLOTTE-MECKLENBURG SCHOOLS, CHARLOTTE, NC

Ms. OBAEI. Senator Hagan, members of the board of education, fellow panelists, and other distinguished guests, it is truly an honor to speak to you about a matter very dear to my heart. My name is Raha Obaei. I am a 6th grade teacher at Kennedy Middle School in Charlotte, NC, and I am a technology native.

I grew up in an ever-changing, technology-forward school district that had first generation iMacs in each of our elementary classrooms. I was editor for my high school newspaper when we transitioned from a staff-wide, 6-hour layout night to one person working on InDesign and Photoshop.

I went to college at the University of Missouri where I was in the first graduating class to no longer have a 20-page physical portfolio, but an e-portfolio on a tiny flash drive, all backed up by Microsoft Skydrive. I have since taken what I've learned and been exposed to in my own years of education and have applied them in my classroom. My students utilize technology in one facet or another every single day.

As you know, North Carolina fully adopted the common core last year. With that change, I pooled resources by the only avenue I knew how—through the Internet and without a traditional textbook. My students spend as much time as possible in the computer lab with Google Chromebooks and on iPads, because I believe they are facilitating my students' learning beyond just factual recall and engaging them in a way a textbook simply cannot.

With the limitless bounds of the Internet and technology, I can better differentiate learning for each of my students. If Johnny comes to me on a third grade reading level, he won't become frustrated because of a text he cannot read. I have a wide variety of resources available at my fingertips to better educate each of my students, whether they are reading at a high school level and have never felt challenged by a humanities class, or they just entered the country weeks ago with minimal language skills.

I've seen firsthand the impact it has on student learning, as well. My students did, on average, 19 percent better on an assessment of a unit that was facilitated by technology than on an assessment in which a hard copy of a text was utilized.

However, what is almost more important to me is the anecdotal evidence my students provide for me every single day. When explaining to my students that we will be learning the next unit by solely reading textbooks and writing notes, one of my students meekly raised his hand and asked if they were in trouble. Not only is it a disservice to our children to teach in ways that are outdated and not as effective, but it is apparently also a form of punishment.

[Laughter.]

All jokes aside, I know I am pushing my students' critical thinking skills and giving them the tools they need to succeed in their educational and professional careers. My students have been the ones that have brought to my attention that things we have

learned in the beginning of this school year are now historically inaccurate.

Our first unit of the year is on human beginnings and the stages of man. One of my students brought their tablet to me before class a couple weeks ago and showed me a news clip stating that archaeologists have found fossils of early man that may show that there were no distinct different stages of man.

With this increasing access to new information, it is impossible for textbooks to keep up with the pace. I taught them something from a textbook, and, in turn, they taught me using technology.

At the end of the day, when students leave my classroom, I want them to have mastered the content, because I do believe there is significance in knowing all about Mesopotamia. But, moreover, I want them to have the refined skills they can use outside social studies and sharpen their minds to one day be critical thinking citizens of the world.

Thank you.

[The prepared statement of Ms. Obaei follows:]

PREPARED STATEMENT OF RAHA OBAEI

Senator Hagan, Dr. Morrison, fellow panelists, and other distinguished guests, it is truly my honor to speak to you about a matter very dear to my heart. My name is Raha Obaei, I'm a 6th grade teacher at Kennedy Middle School in Charlotte, NC and I am a technology native. I grew up in a rapid, ever-changing technology-forward school district that had first-generation iMacs in each of our elementary classrooms. I was editor for my high school newspaper when we transitioned from a staff-wide 6-hour layout night to one person working on InDesign and Photoshop. I went to college at the University of Missouri where I was in the first graduating class to no longer have a 20-page physical portfolio, but an e-portfolio on a tiny flash drive and backed up by Microsoft Skydrive.

I've since taken what I've learned and been exposed to in my own years of education and have applied them in my classroom. My students utilize technology in one facet or another every single day. As you know, North Carolina fully adopted the common core last year. With that change, I pooled resources—the avenue I knew best—through the Internet and without a traditional textbook. My students spend as much time as possible in the computer lab, with Chromebooks, and on iPads because I believe they are facilitating my student's learning beyond just factual recall and engaging them in a way a textbook simply cannot.

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I've seen first-hand the impact it has on student learning, as well. My students did on average 19 percent better on an assessment of a unit that was facilitated by technology than on an assessment in which a hard copy of a text was utilized. However, what is almost more important to me is the anecdotal evidence my students constantly provide for me. When explaining to my students that we will be learning the next unit by solely reading textbooks and writing notes, one of my students meekly raised his hand and asked if they were in trouble. Not only is it a disservice to our children to teach in ways that are outdated and not as effective, but apparently it is also a form of punishment.

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Thank you.

Senator HAGAN. You've given me a new word, native—what was it, a native techy?

Ms. OBAEI. Technology native.

Senator HAGAN. Technology native. Thank you very much.

Now we have Eric Graham, a high school student right here at Phillip O. Berry Academy.

STATEMENT OF ERIC GRAHAM, HIGH SCHOOL STUDENT, PHILLIP O. BERRY ACADEMY OF TECHNOLOGY, CHARLOTTE, NC

Mr. GRAHAM. Before I begin, I'd like to thank everybody here. Thank you for showing up and showing your support. I'd also like to give a special thanks to Mr. Hall and Dr. Carroll for selecting me to represent our school here, Phillip O. Berry. And it would also be a disservice if I did not recognize my mom for being here.

[Laughter.]

Senator HAGAN. Yay, mom.

Mr. GRAHAM. Yay, mom. All right. Time for me to begin.

Technology is important in school because it provides economically disadvantaged students an equal opportunity to advance along with the fast-paced digital world. I go to a school here, Phillip O. Berry, where many students own smart phones, yet do not own a computer or printer due to economic reasons.

Ten years ago, my peers would not have had a problem completing class work, homework assignments, and projects, because it was acceptable to submit those items in a handwritten fashion. However, in the present, the acceptance of handwritten assignments has dwindled, and the demand for typed or digitally submitted documents has increased significantly.

The shift from pen ink to printer ink is exemplified with college applications. A decade ago, many colleges accepted applications that were written by hand and sent in the mail. Present day, those same colleges require students to submit applications online only.

My peers who do not own a computer with Internet access must depend on the technology provided here at school. Otherwise, they would not be able to apply to college. Although their smart phones are capable of Internet access, it is not recommended to apply to college solely from those devices.

Technology in schools provides an equal opportunity to apply to college for all students. It also helps decrease the digital divide between the affluent and the economically disadvantaged.

Technology is also important in school because it prepares students for the workforce. Many jobs in today's world utilize technology in the form of software and hardware to keep up with speedy demands. Technology in schools gives students exposure to what will be required once they begin to work in their career fields.

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Exposure to word processing software or engineering design software such as Autodesk Inventor, along with contact to 3-D printers gives students skills and experience that will allow them to be competitive applicants when it is time to look for a job, particularly in their desired career fields.

As a 21st century learner, technology is important in every area of my life, especially in school. Nearly every assignment I complete requires some form of technology. Without technology in a world that is ever changing, I, my peers, and many other students would be lost amidst resources, ideas, and opportunities that could change the world for the better.

In closing, I would like to remind you that technology has a significant impact on students' futures by giving them all equal opportunities at a college education and providing essentials that will lead to success in their chosen occupations after college.

Thank you.

[The prepared statement of Mr. Graham follows:]

PREPARED STATEMENT OF ERIC GRAHAM

Technology is important in school because it provides economically disadvantaged students an equal opportunity to advance along with the fast-paced digital world. I attend a school where many students own smart phones, yet do not own a computer or printer due to their economic situation. Ten years ago my peers would not have had a problem completing class work, homework assignments, and projects because it was acceptable to submit those items in a hand-written fashion. However, in the present, the acceptance of hand-written assignments has dwindled, and the demand for typed or digitally submitted documents has increased significantly. The shift from "pen ink" to "digital ink" is exemplified with college applications. A decade ago many colleges accepted applications that were written by hand, and sent in the mail. Present day, those same colleges require students to submit applications online only. My peers that do not own a computer with Internet access must depend on the technology provided at school, otherwise they would not be able to apply to college. Although their smart phones are capable of Internet access it is not recommended to apply to college solely from those devices. Technology in schools provides an equal opportunity to all students applying to college. It also helps shrink the digital divide between the affluent and the economically disadvantaged.

Technology is also important in school because it prepares students for the workforce. Many jobs in today's world utilize technology in the form of software and hardware to keep up with speedy demands. Technology in schools gives students exposure to what will be required once they begin to work in their career fields. Exposure to word processing software or engineering design software such as Autodesk Inventor, along with contact to 3-D printers gives students skills and experience that will allow them to be competitive applicants when it is time to look for a job, particularly in their desired career fields.

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In closing I would like to remind you that technology has a significant impact on students' futures by giving them all equal opportunities at a college education, and providing essentials that will lead to success in their chosen occupations after college or in the workforce.

Senator HAGAN. Thank you, Eric, very much.

Sean O'Leary, 5th grade teacher from Hawk Ridge Elementary.

STATEMENT OF SEAN O'LEARY, 5TH GRADE TEACHER, HAWK RIDGE ELEMENTARY, CHARLOTTE, NC

Mr. O'LEARY. Hello, Senator Hagan, CMS School Board, and other distinguished guests. And I also have to say hello to my mom.

[Laughter.]

My name is Sean O'Leary, and I am a 5th grade teacher at Hawk Ridge Elementary right here in Charlotte, NC. I am here today to share some successes that my students and I have accomplished in the classroom through the implementation of technology.

Hawk Ridge Elementary began implementing a Bring Your Own Technology program in the spring of 2012, where students could bring their technology from home into the classroom. In the year and a half since then, I have seen throughout the entire school more engaged and independent learners, in large part due to the ready availability of technology in the classroom.

Before I tell you about some of the amazing things that my students have been able to accomplish using technology, I want to clear up a couple of misconceptions pertaining to technology in the classroom. Many people that I've heard or talked to are quick to jump to the conclusion that placing iPads or laptops into the classroom is what teachers want because it makes our jobs easier. I have to respectfully disagree.

I do think that having access to technology makes the classroom more efficient but never easier. It is my finding that access to technology actually creates many opportunities for teachers and students to challenge ourselves in the classroom and grow as 21st century learners.

Teachers are challenged to create or find engaging activities that promote critical thinking and challenge their students without simply throwing a device in front of them with a fun math game. Teachers are charged with the task of staying current and up to date with changing technology, data, and effective methods to implement the ever-changing technology.

Students are challenged to rely less on receiving step-by-step instructions and to rely more on their natural inquisitive nature to find, solve, create, share, interpret, and deliver information that they discover in this technological world. Students are challenged with real world tasks that help them, as put by one of my students, "develop a stronger sense of responsibility which we will need in the future."

The students in my classroom and throughout the entire Hawk Ridge Elementary School have been responsible for some truly incredible educational moments involving technology. Growing up in high school, social media was a part of my life, and social media has become an integral part of my classroom for facilitating discussion both in and outside of the classroom setting. Mr. O'Leary's class blog has become a place where students can share and discuss information in a safe and structured environment.

I originally started the blog as a way to post supplementary information about topics we studied in class. "We talked about chemical changes today. Well, on the blog I put a couple of videos for you guys to check out at home." I was amazed at how quickly the students took over my blog. "Can I post another video I found?" "I found a great Web site about this last night" and "I just had to comment on that" became common phrases I heard as the students unpacked each morning.

The kids were not only taking ownership of their learning, but they were sharing that learning with other kids. Currently, the

blog is almost 100 percent kid-run and moderated. I take time to make sure that everything is appropriate and school related, but, so far, that hasn't been an issue.

The kids have started posting about anything from books to movie trailers based on books to great math resource Web sites to cool science videos they are finding online. The students are taking the information I'm teaching them, making it relevant to their lives, and then sharing it with others. When I was in elementary school, the only way to discuss what we learned outside of class was by instant messaging or by passing a note the next day in school.

Without the access to technology in the classroom, many kids are so willing to take information at its face value and move on. I've seen a deepening of understanding and a huge improvement in the motivation to learn and a responsibility in making learning important to themselves in my students since introducing technology to the classroom.

I can't tell you how many of my friends that are teachers in other schools, cities, and States have asked me about having technology in my classroom every day. "Aren't you nervous?" "Are you worried about them using it incorrectly?" "How can you manage all of those students?" My response has always come from one of my favorite authors, T.S. Eliot. He says, "If you aren't in over your head, how do you know how tall you are?"

Educators and students are ready for this change. We are ready, willing, and able to dive in head-first and embrace technology in the classroom.

[The prepared statement of Mr. O'Leary follows:]

PREPARED STATEMENT OF SEAN O'LEARY

Hello Senator Hagan and other distinguished guests. My name is Sean O'Leary and I am a 5th grade teacher at Hawk Ridge Elementary School in Charlotte, NC.

I am here today to share the successes that my students and I have accomplished in the classroom through the implementation of technology. Hawk Ridge Elementary began implementing a Bring Your Own Technology program in the spring of 2012. In the year and a half since then, I have seen, throughout the school, more engaged and independent learners due, in large part, to the ready availability of technology in the classroom.

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I can't tell you how many of my friends that are teachers in other schools, cities, and States have asked me about having readily available technology in my classroom. "Aren't you nervous?" "Are you worried about them using it wrong?" "How can you manage all of that?" My response to them has always come from one of my favorite authors, T.S. Eliot. "If you aren't in over your head, how do you know how tall you are?" Educators and students are ready for this change! We are ready, willing, and able to dive in head-first and embrace technology in the classroom.

Senator HAGAN. Thank you very much, Sean.

We have another student, an 8th grade student at Kennedy Middle School, Mazzanni Burnett.

STATEMENT OF MAZZANNI BURNETT, 8TH GRADE STUDENT, KENNEDY MIDDLE SCHOOL, CHARLOTTE-MECKLENBURG SCHOOLS, CHARLOTTE, NC

Ms. BURNETT. Thank you, Senator Hagan and other distinguished guests, for allowing me to attend this hearing and giving me the opportunity to share with you about my experiences regarding technology. My name is Mazzanni Burnett. I am an 8th grade student at Kennedy Middle School here in Charlotte, NC, and I am also a proud technology native.

I am currently growing up in a world in which technology is used for various reasons and in many ways. I would like to share with you how I feel that the use of technology would be beneficial to my peers and I in school.

I feel technology is beneficial in schools simply because, as a teenager, being able to have use of computers keeps me engaged and motivated.

Now, I am not saying that the use of computers or any other technology device is all that keeps me interested in school, but it plays a big role. I have noticed in my short years of growing that since the use of technology has become a part of schools, a lot more kids my age are participating more in classrooms than before.

I feel that some children my age may find that following along with a class while using textbooks is a bit overwhelming for various reasons. However, textbooks can be a good place to find some helpful information, but to be able to have access to computers in school to research information, I feel, is far more beneficial.

For example, when my teacher gave me a project to complete on someone I refer to as a hero, I decided to write about the late Dr.

Martin Luther King, Jr. And I knew exactly where to go to obtain any information needed to complete my assignment via the Internet.

Computers are great tools to use for researching information and to be able to gain knowledge on the use of technology. I also feel that at this age, the exposure to computers in school is helping prepare me for bigger and better things.

Everything that we use now on a day-to-day basis uses some type of technology, whether it is a computer, smartphone, iPod, or whatever piece of digital device it may be. Why not use it to learn? What better way to use technology?

So in my conclusion, I think that the use of technology in schools is a great way and a great tool to use when it comes to education. Not only are we getting educated on basic studies, but we are also getting to explore our interests through the use of technology.

[The prepared statement of Ms. Burnett follows:]

PREPARED STATEMENT OF MAZZANNI BURNETT

Thank you Senator Hagan and other distinguished guests for allowing me to attend this hearing and giving me the opportunity to share with you about my experiences regarding technology. My name is Mazzanni Burnett, I am an eighth grade student at Kennedy Middle School here in Charlotte, NC, and I am a proud technology native. I am currently growing up in a world in which technology is used for various reasons and in many ways. I would like to share with you how I feel that the use of technology would be beneficial to my peers and I in school.

I feel technology is beneficial in schools, simply because as a teenager being able to have use of computers keeps me engaged and motivated. Now I am not saying that the use of computers or any other technology device is all that keeps me interested in school, but it plays a big role. I have noticed in my short years of growing that since the use of technology has become a part of schools a lot more kids my age are participating more in classrooms than before. I feel that some children my age may find that following along with a class while using textbooks a bit overwhelming for various reasons. However, textbooks can be a good place to find some helpful information, but to be able to have access to computers in school to research information I feel is far more beneficial. For example, when my teacher gave me a project to complete on someone I refer to as a hero, I decided to write about the late Dr. Martin Luther King, Jr., and I knew exactly where to go to obtain any information needed to complete my assignment via the Internet.

Computers are great tools to use for researching information and to be able to gain knowledge on the use of technology. I also feel that at this age the exposure to computers in school is helping prepare me for bigger and better things. Everything that we use now on a day-to-day basis uses some type of technology. Whether it is a computer, smartphone, iPod, or whatever piece of digital device it may be. Why not use it to learn? What better way to use technology!

So in my conclusion I think that the use of technology in schools is a great way and a great tool to use when it comes to education. Not only are we getting educated on basic studies, but we are also getting to explore our interests through the use of technology.

Senator HAGAN. Thank you very much, Mazzanni.

That concludes the witnesses' testimony here. Now it's time for some Q and As.

I think all of us here at this table—I am very fortunate to be here, but everybody here at this table is so fortunate to be in a school system that has the technology we have been talking about.

We've mentioned how all the schools are connected in North Carolina, but certainly not all schools have the capability and the access to tablets and computers, like the technology that you have.

It would be great, not only to see this kind of availability to every school in North Carolina, but, obviously, in other States across the country, because I truly believe that education is our fu-

ture. And because it is our future, we've got to do what needs to be done to get young people prepared, to have access, to have equal opportunity.

When we talk about achievement gaps, there's going to be huge achievement gaps between technology natives and those who do not have access to technology in their school. One of the things that comes to mind when we talk about technology is a time management issue. I'd love to ask a student and then maybe one of our teachers about how you oversee the use of the tablets and the access to be sure that students are either on task.

I don't know what sort of firewalls you have, but how do you control that? Or is it even a problem?

Mr. O'Leary, if you could start, you control for appropriateness. Even your blog, which sounds great.

Mr. O'LEARY. Obviously, the technology that's brought into the classroom has to be Wi-Fi capable, because our school has a Wi-Fi that is filtered it allows students to access the same Web sites that they would access on the school desktop computers. I'll admit when it first rolled out, it was the spring of my very first year of teaching. And as if I didn't have enough classroom management issues at that point, now throwing in 27 iPads was a little daunting.

It's a talking point with your kids, this is an educational tool, that they're doing this not to play games, but to further their education. And just like any new curriculum or new thing that you put into the schools, it's just a management piece for teachers.

Senator HAGAN. Eric, how's that from your perspective?

Mr. GRAHAM. Our Internet use here at school is also Wi-Fi enabled, and we do have blocks placed on our Internet. We all sometimes try to find shortcuts, but I would say that it is very difficult to do so. It is managed here very well.

Senator HAGAN. Let me ask you a question. You mentioned that a lot of the students had smartphones. Do your teachers let you use those phones if they have Internet in the classroom to access that?

Mr. GRAHAM. Very much so. Particularly, in my AP Government class and in my AP English class, our teachers do allow us to use technology if we have some quick facts that we need to look up for an assignment, or there's a word that we don't know, and the dictionary is too slow to use.

The phones are just quicker, and teachers are realizing that, and they're allowing us to use our smartphones nearly every day, every class period, for quick things and things that also relate to the curriculum that's being taught. So, yes.

Senator HAGAN. I want to move to another question.

Dr. Smith, you mentioned 11 early release days that your school board has given to the county. I'm very curious about that, because I haven't heard anything like that before. So I guess you still comply with whatever the school calendar is that's set.

Mr. SMITH. Sure.

Senator HAGAN. And, also, how did Mooresville pay for the access and all the tablets?

Mr. SMITH. The early release days for us—6 years ago when we started, it was not 11. We sold this idea to our community that this

is what we're going to do for students, because it's right for their future.

Our superintendent, Dr. Mark Edwards, did a great job of selling to the community the fact that, if you go to the doctor, you want your doctor to have the latest and greatest medical knowledge so that he or she can treat you to the best of their ability. Why would you not want that for your child and your child's teacher?

So he kind of sold that to the community as doing what's best for the kids, and so we started out with 6 early release days. It was very popular, and we had that for 2 years. But there's all kinds of community issues about that, especially with child care and things. So we had to deal with all those issues.

But over time, it's become the accepted practice, and our school board, again, has been so supportive. And they've seen the results of what that's done for our teachers and how that's resulted in student achievement. Now we have the 11 days in the school calendar so that we can actually work with our teachers.

The gentleman on the end was just talking about classroom management. We do professional development on classroom management with technology, because you can't walk into a classroom where 30 kids have access to the world at their fingertips and teach the same way you used to teach. It doesn't work. So you have to retrain in that professional development.

To your second question about how we afford it, that's the No. 1 question we get in Mooresville all the time. Two things: One is we lease our machines, we're on a 4-year lease. We have built in that process to refresh. We all know we can go buy a computer today, and 10 minutes later, it's obsolete. But we've built that into our budget in terms of how we're going to refresh our machines throughout the years.

The other thing is, as you stated in your opening remarks, we are one of the lowest funded school districts in the State. But yet we were able to do this. And it's about reprioritization of your funding. One example is we haven't spent money on textbooks in 6 years, with one exception, and that's high school AP classes where the college board says you have to use this text. But, otherwise, we haven't spent money on textbooks.

We, in turn, spend that money on digital resources or on the technology to put it in the hands of every single student. There are some things that we gave up as well. But the overall end game is to do what's best for kids and to put this learning opportunity at their fingertips.

Senator HAGAN. That's great. That's a very good opportunity.

Ms. Obaei, let me ask you a question. You mentioned students who come into your class that might have English as a second language and might be brand new. How does a new student get acclimated to a class that is already many, many miles ahead of that student who doesn't have that access? How does that child learn?

Ms. OBAEI. I'm lucky enough to have a lot of English as a second language students. My students, who are maybe on a lower level and maybe are brand new to the country and can barely say hello, they're not doing the same activity as my other students who have lived here their entire lives or students who have even been here for more than a couple of years.

That's where technology has been really my saving grace. I have these students, and if they are brand new, we're working on English and literacy first, and then social studies second.

For my students who have been here a little bit longer, it's kind of finding things that are closer to their reading level, closer to where they feel comfortable, where they are still being challenged and pushed, but also can grasp it and feel joy when they're actually understanding and learning a topic, as opposed to assigning them the same exact assignment as another student, and them just looking at you——

Senator HAGAN. So they just learn on their own level because of the technology.

Ms. OBAEI. Correct.

Senator HAGAN. Let me ask you a question, Dale. This is something that concerned me when I went to the Montlieu Elementary School, and that is when those students in K through 5 matriculate into 6th grade, if that 6th grade middle school doesn't have the technology that they were used to in K through 5, then they're going back to maybe either a smart board or a chalk board.

What happens to them? I don't know if you've had friends in your school—I know you said you've been there the whole time—that have transferred and moved someplace else or gotten out of that system. What happens?

Mr. MILLER. Right. Yes, ma'am. Well, being on a personal level with those friends, I talk to them about where—especially in college, you know, people go off and they're kind of on their own, as opposed to having what they've had the last 4 or 5 years. When they do take that step and move on to something new, and they're not necessarily given the same opportunities we are, it is tough for them.

But I think that the skills learned and the drive given through the tools that we have really stays with the students. And it's not necessarily moving away from the district or moving away from all the technology. But they take with them their drive to do better.

Senator HAGAN. I'm more worried about when the younger people go to the next level if they don't have that access in their school systems. Has anybody seen an example like that?

[Nonverbal Response.]

Senator HAGAN. No?

Let me ask you a question, Ms. Thibault. You were talking about an $80 web cam and a $60 sound system. Most school systems, I do believe, could afford that kind of technology and that kind of expense.

Ms. THIBAULT. Certainly.

Senator HAGAN. So what that brings to the students in North Carolina would be, as you said, an AP Calculus, a BC Calculus, the aerospace course. And the difference that would make to that rural county that had a handful of students that really wanted to take those classes would be the affordability and the availability to do that. Are other States doing that that you're aware of? Is this the norm now?

Ms. THIBAULT. It depends. In online, yes. In online, they are using—our State virtual school is the second largest in the country. Many other States are investing in opportunities for students to

take courses online at their own pace during a flexible time during the school day.

As far as I know, the other STEM schools like us, the other statewide STEM schools, have neither the mandate to serve every congressional district equally nor the distance education program. That is a very unique North Carolina situation. I think that our school and our State has determined that regardless of zip code, we're going to make sure that you have the same opportunities to study aerospace engineering no matter where you live.

Senator HAGAN. How does that student who is a distance learner actually communicate with the teacher and with questions and other kinds of—like once you take the test, if you have questions on what you missed?

Ms. THIBAULT. In our video conferencing courses, just like you and I are communicating—real time, synchronous.

Senator HAGAN. Do you schedule appointments? Is there office time?

Ms. THIBAULT. They are in class during the day, being taught by an instructor, and in class with as many as six to eight other schools at the same time. So the students interact across sites as well as interacting with us.

Senator HAGAN. So their school system has to coordinate that class with their other classes that they're taking.

Ms. THIBAULT. That's correct.

Senator HAGAN. Has that been a problem?

Ms. THIBAULT. It is, often. We are in the catalog at many high schools, and students can sign up for our courses. But that's the advantage, also, of online, because it doesn't have to fit into someone's schedule. They can do that at their convenience, and then we could have some synchronous opportunities.

Our online students take their courses often during the day because many don't have home access, and they need the time during the day to have access to the technology. But then they have evening web-based meetings with their teacher, and they sometimes have to go sit in the parking lot of McDonald's to get the Wi-Fi. We make sure they have a device, but not everyone has the connectivity they need in order to take full advantage of the programs from the School of Science and Math.

Senator HAGAN. Interesting.

I was just curious, Dale, what your senior project is.

Mr. MILLER. Mine is actually a little bit different. Like I said, it's really open as to what you want to do. You can kind of choose. And what I'd really like to do—I decided to pursue the sport of bull riding. So it's a little bit——

Senator HAGAN. On the Internet?

Mr. MILLER. Yes, ma'am. I decided that as long as I could find the information I needed to do that, it would be something I'd like to pursue.

Senator HAGAN. Have you gotten on the bull yet?

Mr. MILLER. I have, yes, ma'am, and off of it very quickly.

[Laughter.]

Senator HAGAN. That's great.

Mazzanni, tell us a little bit more about your project on Dr. Martin Luther King. I went on a very interesting trip this year. It was

an entity sponsored in Congress, and it was called Faith in Politics. We actually went to Tuscaloosa, AL, people of all faiths, people from Congress, people from different parts of the country, and it was an incredible historical and educational time for me to be with John Lewis as we walked across the bridge in Selma.

So I'm just curious. What sorts of other research were you able to—one or two sites that you really liked on your Martin Luther King project?

Ms. BURNETT. Different sites included *Myhero.com* and *History.com*. To see what information was right and what information was wrong, I compared the information on both sites to make sure that they were valid.

Senator HAGAN. But how could you tell which one was right? Did you do multiple research?

Ms. BURNETT. Yes, ma'am. I used multiple Web sites.

Senator HAGAN. What feedback did you get from your teacher on that, as far as the research sites that you went on? Did anybody ever say, "Oh, we're not crazy about that one."?

Ms. BURNETT. Yes. Wikipedia.com.

[Laughter.]

Senator HAGAN. Interesting.

Sean, when you first started teaching, did you have—tell me about the professional development that was available to you to use technology? And you, too, probably are a technology native. But what about other teachers at your school that aren't?

Mr. O'LEARY. I think most of the staff at Hawk Ridge—nobody was really reluctant to accept this. But I think it was nice that we rolled it out in a way that—the PTA was generous enough to buy iPads for all of the teachers at our school, knowing that in the next year, we would start to buy more and more iPads for the school, giving us, as teachers, an opportunity to troubleshoot and figure out what problems our students are going to run into.

But then it was nice that we rolled it out in stages. We didn't just throw technology to all the students and to the whole school and just—"Here you go. Just do what you can with it." We took it step by step and changed what we were doing every step of the way.

We saw what worked and what didn't work, what we needed to change. It was nice to collaborate with other teachers on my team and other teachers in the school and just see what was working.

Senator HAGAN. Do you have time after school during professional development time to really coordinate with the other teachers?

Mr. O'LEARY. Yes. Our technology teacher is amazing. We have tech time, and she highlights great things that we can put into our classroom or great things that other teachers have been using in their classrooms. And we have professional development on different Web sites and things like that, Gaggle and Glogster, that we can then get acclimated with.

Senator HAGAN. Gaggle and Glogster? I'm not familiar with Glogster. What is that?

Mr. O'LEARY. It's like an online pin board, or like an online cork board, where you can go on and post everything about a topic onto one web page, and then it links you from there to go all over.

Senator HAGAN. Eric, let me ask you a question. What happens when a piece of technology breaks here at Phillip O. Berry Academy? Who fixes it? And who pays for that to get fixed? Whose fault is it, if it breaks?

Mr. GRAHAM. I'm not sure who pays for it. But I know we have a great technology fixer here, Mr. Saintvilus. Any time something breaks down, our teachers pick up one of the school phones and just call him right up, and he's on his way ASAP, and he's here. And he fixes the problem with the technology as best he can, and he gets it running back to optimal level where it should be at all times. So Mr. Saintvilus is our technology fixer, so to speak.

Senator HAGAN. Dr. Smith, let me ask you a question about that, too, because I know with some students, just having access to that, it can be broken. I can remember when my son went to college. He became part of the SWAT team, and the SWAT team was Students With Access to Technology. He was paid. He got there early. When students came in, he'd set up everything that needed to be set up, connect, and all that kind of stuff.

What happens when it breaks? And who pays for it?

Mr. SMITH. Sure. First of all, before any student in our district gets a device, they and their parents sit through training.

Senator HAGAN. Their parents, too?

Mr. SMITH. Their parents, too, every year. And we talk to them about appropriate use and care for the machine. They know what they're responsible for. They sign a policy, our responsible use policy. They sign it every year.

Senator HAGAN. What if the parent doesn't come in?

Mr. SMITH. We do whatever it takes to get that parent to sign. And we have gone to the parents' places of business to make that happen. But every parent signs. It's not an option. If you're going to go to school in Mooresville, you're going to do this. So we do whatever it takes to reach those parents.

So they understand up front what their responsibility is and those types of things. And damage does occur. But then there's always an investigation as to whether or not it's accidental or it's negligence. If it's negligence, they're responsible for it, and we talk to them about that from the beginning. So it's very up front.

I'm actually going to defer to Dale, because Dale works at our student help desk at the high school. So he can kind of give you a more hands-on perspective.

Senator HAGAN. So you're a SWAT team member.

Mr. MILLER. Yes, ma'am. Every school in our district actually has a help desk. And what that is, is basically just a technology center for all things that do go wrong. You know, that does happen. It's pretty common.

So what happens is if a student has a particular problem with their laptop, whether it be broadband, networking, or just a mechanical problem, they come down. And our help desk at the high school is a little bit different, because we have student workers, like Dr. Smith said, and I'm one of those.

We have a teacher in there. His name is Mr. Sherrill, and he works with Apple. He's very familiar with the machines and what we need to do to fix them. He teaches us how to repair them and how to refer, if we need to, to him to get the right thing fixed, the

right thing managed well, and get it running smoothly. Sometimes it's very interesting, but it's very fun to do.

Senator HAGAN. Great.

Ms. Thibault, when you have students coming in from 13 different congressional districts to the School of Science and Math, are all of them as up to speed with technology equally? I mean, I would think not.

Ms. THIBAULT. Certainly not.

Senator HAGAN. So what do you do to help those students?

Ms. THIBAULT. We provide tremendous amounts of support, especially initially. The students are required to go through some online course modules to learn how to use the technology, so they're learning online.

Senator HAGAN. And this is once they're there?

Ms. THIBAULT. Once they've been accepted, there's summer work. There are also some of our faculty that run some online support to prepare students for coming in to use mathematical modeling software or other—they preemptively know, because of experience, that students are going to come in at different levels of preparedness. We engage with them when they're accepted in order to make sure that they're prepared.

Just like with course offerings, smaller schools and rural schools don't always have as many of the options available to them. So we have to meet them where they are and individualize and take them where they need to go.

Senator HAGAN. Ms. Obaei, how about in your situation? You've been teaching for how many years?

Ms. OBAEI. Two years.

Senator HAGAN. So when you came in 2 years ago, I'm just wondering—not any names—but are there other faculty at your school who are hesitant to use technology? Can you sense any of the issues, maybe not just at your school, but at other schools where your student was taught, things like that?

Ms. OBAEI. I think any hesitation that might come up is just from lack of knowledge, really not knowing how to handle devices and technology. I know that, specifically, at Kennedy, we have Technology Tuesdays, when we all sit and kind of share about what's going on and look at professional development on maybe a new application or a new Web site.

And just generally, we share a lot of our technology. We share computer labs. We share Google Chromebooks and iPads. So it's kind of created a sense of camaraderie among the technology natives and the technology immigrants, people who are coming into the world of technology.

Just as an example, a staff member whose room is right next to mine is a technology immigrant, and she is hesitant, but really just needs a lot of help with technology. I sat with her one morning and did a new application for her to control her music in her classroom. And since then, I hear her music all the time in my classroom.

[Laughter.]

So any hesitation is quickly squashed just with a little bit of development and knowledge. And everyone is very open to that.

Senator HAGAN. That is just a little bit. For some people, it must take much longer.

Ms. OBAEI. Sure. I can imagine that it must be very difficult, just the idea of everything that we do online and everything we do using technology that we haven't in years past. It must be difficult to make that transition. But I think once that transition is made, or while you're in the process of it, it's so much simpler.

Senator HAGAN. Dr. Smith, let me ask you that same question. When you all first got started, how difficult was it to get the teachers up to speed with the students that were coming in?

Mr. SMITH. It was a challenge. I'll be very honest. We had probably 25 percent of our teachers that were like Raha and were very early adopters and kind of jumped on it. We had probably 50 percent of our teachers that were fence riders, and they thought, "Oh, this may be another fad. This may go away. I'm just going to sit back and see what happens."

And then the other 25 percent were the laggards. They were like, "No, we're not going to do this." But over time, when teachers started to see the interaction that students have and the ability that they have—I kind of term it exponential potential that students now have that they didn't have before.

And we talked about access for every student. You don't have to be the student that has access to technology just at school. You can now take it home with you. So when teachers started to see that in their students and see that light bulb go off and see students engaged in what was going on, it really changed their teaching practice. Now, that's gradual.

But our philosophy in Mooresville was that we're all here in North Carolina, and we're all moving west. Now, some of us are already in Texas, and some of us are in Ashville. But as long as we're all moving, then we're going in the right direction.

Over time, that first group has grown. The laggard group is extremely small now. Some of them have retired. Some of them have found other places to go. The majority of them, however, have jumped on the bandwagon.

Senator HAGAN. Well, that's great.

Ms. Thibault, I know you have a lot of incredible faculty at the School of Science and Math, and not everybody is teaching in the distance learning part. Do you have teachers that are still using textbooks and blackboards?

Ms. THIBAULT. Oh, certainly. We certainly do. Blackboards are still alive and well in some of the classrooms. But with the students having a device and the potential for things like mathematical modeling, computational science, the integration of computer science throughout the curriculum, really, there's no way to not teach with technology at Science and Math. I think we truly are STEM. The T and the E are not silent in our school.

Senator HAGAN. Very good. Well, I'm going to bring this hearing to a close, and I really appreciate your time, each and every one of you, and, specifically, here at Phillip O. Berry Academy. I do want to say that having listened to all of you here, I know there's another part of North Carolina that doesn't have the access to technology that the people here at this table do.

But I do think that we in North Carolina are truly leading the way in implementing this digital learning. We're doing so much in our State to ensure that our children get the best education pos-

sible, and I believe that other States should look to us as an example as to how we push educating our children into the 21st century. I am going to take this information back with me to our Health and Education Committee.

I do, once again, say thank you to everybody. I know it's taken a lot of time to prepare for this setup here. And as a member of this Health and Education Committee, my colleagues and I are looking forward to working together to make significant changes to the No Child Left Behind law. One of my top priorities is updating the education technology portion of that bill to make sure that it reflects and that it supports the good work that we've heard about here today.

I want to thank the principal here and the staff for hosting us. I really cannot say enough about the great things that are happening at schools like the Phillip O. Berry Academy, Montlieu Academy, all of Mooresville, and what we're doing here in North Carolina to really set the stage for moving children, our students, into the 21st century. We've got to do it, and we've got to bring everybody with us in doing so.

I do want to close this hearing, Educating for the 21st Century: Bringing Today's Classrooms Into the Digital Age.

The Senate Committee on Health, Education, Labor, and Pensions is now adjourned. Thank you very much.

[Whereupon, at 3:23 p.m., the hearing was adjourned.]

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