U.S. Senator Kay Hagan Education Technology Field Hearing
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Witness Testimony

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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 videoconferencing. Now in its twentieth year, our two-way, interactive videoconferencing 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 webcams and $60 speakers to begin participating in sixteen 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 twenty-six 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 one 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.