Testimony of
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"Raising the Bar: Reviewing STEM Education in America"

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Good morning Chairman Rokita and Ranking Member McCarthy and members of the Subcommittee. My name is Bill Kurtz and I am the CEO of DSST Public Schools, a network of six charter schools in Denver, Colorado. DSST stands for the Denver School of Science and Technology, which was the name of the first charter high school we opened. I am pleased to be here today on behalf of DSST Public Schools to discuss K-12 STEM education.

DSST Public Schools was founded in 2004 – and I served as the founding Principal of our first school DSST: Stapleton High School. I have 18 years of experience leading schools after spending the first four years of my career working on Wall Street. STEM is an important priority for me. I currently serve on the National Research Council and National Academy of Engineering iSTEM committee which will complete a report on integrated STEM this summer.

DSST Public Schools serves more than 2,000 students at six open-enrollment STEM charter schools on four campuses; our schools are focused on preparing every student to succeed in four-year college with the opportunity to pursue a STEM field of study in college. We operate four middle schools and two high schools and are scheduled to open a fifth middle school in June 2013; by 2020 DSST Public Schools will have 10 schools on five campuses that will serve over 4,500 students, helping Denver Public Schools double the number of four-year college-ready graduates exiting Denver Public Schools.

All of our students enroll through a non-selective, random lottery. DSST schools are not magnet schools or in any way selective. As a result, our student body is very diverse – nearly 60% of our students are from low-income families and 75% are minorities. Our schools truly represent a cross-section of Denver, the city we serve.

DSST Public Schools operates some of the most successful public schools in Colorado. Last year, DSST Public Schools operated the highest-performing middle school and high school in Denver. We are most proud of measures that show growth – meaning, how much did a student learn from the first day of school to the last day of school. Within the state of Colorado, our schools showed some of the highest growth numbers of all public schools, according to the Colorado Growth Model, on State CSAP tests. Our second high school, serving students in the largest school turnaround zone in the state of Colorado, achieved the 2nd highest standardized test growth scores of all of Colorado's 2,000 public schools.

Most importantly, DSST proves, without a doubt, that all students, regardless of race or income, can earn a rigorous STEM high school diploma and attend four-year colleges and universities. Preparing every student to succeed in a four-year college with the opportunity to study STEM is at the center of DSST's academic program. Every single senior in the history of DSST Public Schools has earned an acceptance to four-year college – an unprecedented track record of success in Colorado. 95% of our graduates enroll in post-secondary education with in the first

two years of graduating DSST. DSST graduates had the fifth-lowest college remediation rate of all public and private high schools in Colorado last year while being a considerably more diverse population than the graduates from other high schools with the lowest remediation rates. Ninety-two percent of those students persist from Freshmen to Sophomore year and 45% of our students are choosing STEM fields of study in college, compared to a national average of 14%.

I am here today to discuss what DSST is doing to ensure that our students are prepared for post-secondary study and careers in STEM. Preparing our nation's students for our highest-need, hardest-to-fill jobs is one of the most important tasks of our public education system. Today, we are not providing our students from low-income families with access to the highest-quality STEM education and the preparation needed to enter critical fields like engineering, computer science and bioscience. We have long reserved STEM education for the gifted and talented, denying our students and our nation's employers with the opportunity to fill a critical national need. DSST Public Schools represents an important and growing movement to open up high-quality STEM education to all students regardless of their ethnic, economic or academic background. Here are a few key building blocks of our program:

First, our schools are uniquely built on the premise that all students deserve access to a high-quality STEM education. A majority of DSST students enter well below grade level in the 6th and 9th grades and could never be accepted into a magnet science program on the basis of a test. Many students are conditioned to believe that science and advanced math "is an extra" and only for "smart kids." In our schools, these subjects are not extras, but a core subject for all students. All students are required to take a STEM college preparatory curriculum – there is no remedial track in our school.

Our second key belief is that schools must provide a rigorous STEM preparatory curriculum. We believe that the most important factor in a student choosing and ultimately completing a STEM degree is his or her preparedness to succeed at the college and graduate level. Thus we design our curriculum to provide students with the best possible preparation to succeed in STEM fields in four year colleges.

For example, regardless of their starting point at DSST, all students are expected to pass 3 years of integrated science in middle school and more than 6 years in high school – and many students take more. Students take algebra-based high school physics in the 9th grade. This provides students with a lab-based class to practice, apply and synthesize the math skills they are learning elsewhere. All 9th grade students also take "Creative Engineering" where they learn the design process, how to conduct basic research, and how to maximize and minimize constraints so they can develop a better understanding of engineering and the sciences as careers that improve the human condition. Students complete their high school requirements by taking a college level-physics class coupled with an engineering course or a college-level biochemistry class coupled with a bio-technology class. Math is also a critical component of a rigorous STEM curriculum. All DSST students are required to pass at least pre-calculus to graduate.

We provide several important opportunities for our students to apply their learning to the real world. Each junior is required to complete a two-day a week internship at a workplace – often

times a STEM work place. Our seniors must complete a capstone Senior Project in order to graduate, and I am quite proud of their work. Just to highlight a few examples, our seniors have:

- Designed and built a Magnetic Linear Accelerator as a potential way to launch space vehicles;
- Modeled population growth with slime mold;
- Created a science-fiction film about potential life on Europa, a moon orbiting Jupiter; and
- Developed a low-cost solar-powered lamp for developing countries so they can keep lights on for studying, thus keeping more kids in school (this project is still in development).

Lastly, we believe the success of any school must be rooted in a strong school culture that focuses on building character and creating an environment that expects all students to be college ready. Students are challenged, but supported in our schools. A peer-driven culture is reflected in each of our schools where going to college is "cool" and expected.

Of course, DSST and our students would not be successful without the dedication and expertise of our outstanding teachers. Teachers at DSST are driven by their unwavering belief in our students, driven by data, and continually reflect on student performance. They receive extensive support, including observations and feedback, peer-driven professional development, and targeted development in new instructional techniques to ensure they are incorporating the best instructional strategies in their classrooms.

We recruit our teachers from across the nation, with a focus on those with less than seven years of teaching experience. In particular, we seek teachers who have deep passion for their subject, who share our belief that all students can succeed in a rigorous college preparatory program, can use data to guide their instruction and are strong learners willing to push themselves. We source our teachers from Teach for America alumni, other district schools, second-career teachers, and local colleges and universities.

We provide robust professional development for our teachers throughout their first year at DSST, including an extensive summer school program. Our teachers are provided a week of intensive training followed by an opportunity to teach in one of our summer school programs to apply and hone their skills. New teachers join our current school teams for two more weeks of professional development prior to the school year beginning in August. Our teachers set goals at the beginning of the year to improve their teaching. Throughout the year, teachers receive regular feedback on their growth towards those goals from their peers, teacher leaders and instructional leaders in our schools.

Finally, I would be remiss if I didn't share with the Subcommittee the important role that our charter status plays in our success. We are fortunate to have a very healthy and collaborative relationship with our school district, Denver Public Schools. But as a charter school, we have the freedom to design our curriculum, and autonomy in the hiring of our teachers and monitoring

their performance. And we are able to demand a high level of rigor from our students and teachers.

DSST hires 70-80 new teachers each year. And as I mentioned earlier, we recruit from across the nation. We also have the flexibility to seek out teachers from non-traditional sources, and we are free from the certification requirements, timelines and other hiring restrictions that traditional public school systems are faced with. In addition, we have flexibility on pay schedules and thus give our teachers performance-based raises. Our teacher evaluations are based on teacher self-reports, peer input, administrator evaluations and student data. DSST Public Schools is currently developing a teacher career pathway where teachers will be provided a clear continuum and pathway to develop towards being a master teacher. Fifty percent of a teacher's evaluation will be based on student achievement data.

In closing, I would like to leave the committee with three key thoughts on how to best replicate the success of schools like mine.

First, support the federal Charter Schools Program. This program has been a life-line to thousands of charter schools, including DSST. Without the start-up support from this program, I would not have been able to open my school.

Second, my school is already governed by a set of rules and regulations outlined in a charter agreement with my authorizer which allows me the freedom to run my school in exchange for outcomes. Every time the federal government comes up with a new rule or regulation that doesn't take into account the unique nature of charter schools, my ability to innovate is hampered and my charter agreement becomes less meaningful.

Finally, the best way to get students interested in the field of STEM is to ensure that they have access to core content in this area delivered by an effective teacher. Teachers, who have subject matter mastery in the field of STEM, rather than just a teacher training degree and certificate, are better able to educate students in this field. Federal programs have allowed schools like ours to attract and retain an effective teaching workforce. I hope that you will continue to support these important programs.

Again, I am pleased to be here today to discuss this very important issue. I hope I have shed some light on how DSST is able to succeed, as well as the importance of STEM-focused education, the importance of our charters school status.

Thank for this opportunity and I would be happy to answer any questions.