Prepared Testimony of
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at the hearing entitled
"*The National Mathematics Advisory Panel Report: Foundations for Success*"
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Chairman Miller, Ranking Member McKeon and Members of the Committee, thank you for the opportunity to present before the House of Representatives Committee on Education and Labor.

During my professional career, I have taught in the fields of mathematics, computer science, and engineering both on the secondary and post-secondary levels. Mathematics came alive for me when I began teaching applied courses in computer science and engineering. Mathematics education then surpassed the normal tasks of completing textbook problems and I was presented with real-world applications—applications with results both predictable and unpredictable. I am currently I enrolled in the General Engineering Technology Associate degree program at Tri-County Technical College in Pendleton, South Carolina so that I can be better prepared in the field of engineering. I want to create an environment that emphasizes critical thinking skills, helps students make logical connections, and instills the desire and excitement to learn more about science, technology, engineering, and mathematics and how it affects our world.

The History of *Project Lead The Way™*

In 2002, I became a *Project Lead The Way™* master teacher in the course *Principles of Engineering.* The following year, I became a master teacher in a second course, *Computer Integrated Manufacturing*. *Project Lead The Way™* helps give middle and high school students the rigorous coursework they need to develop strong backgrounds in science and engineering.

The National Mathematics Advisory Panel's report and recommendations relative to professional development are congruent with the *Project Lead The Way* model in a number of ways. *Project Lead The Way™* rejects what has become commonplace in the teaching profession—cursory weekend workshops that get educators excited temporarily, do not actually change what happens in the classroom. This model embodies the panel's emphasis on content and relevance and includes ongoing support for school counselors, administrators, and their

technical support staff. No more "drive by" professional development that leaves the teacher, the school and the students short-changed and frustrated.

***Project Lead The Way™* Three Phase Professional Development**

An essential criterion in achieving effective professional development is the appropriate alignment of the teacher's skills with the professional development training objectives. The National Mathematics Advisory Panel suggests, "Schools and teacher education programs should develop or draw on a variety of carefully evaluated methods to attract and prepare teacher candidates who are mathematically knowledgeable and to equip them with the skills to help students learn mathematics." To determine the teacher's ability to meet the objectives of the training experience and to assist teachers in academic preparation prior to the training experience, a pre-assessment measure is used. As a result, teachers know more about what they are teaching and how to teach it.

A second criterion for effective professional development is active participation. This model provides teachers with two weeks of intense hands-on training. Teachers experience the curriculum and instruction in the same way their students will in the classroom. The lessons allow opportunities for cross-discipline instruction with both technology and other academic subject areas. The curriculum requires the application of science, technology, engineering, and mathematics. Cross-discipline instruction increases student comprehension and retention, and answers the question so often asked by students, "Why do I need to know this?"

I would like to share one example of the impact that cross-discipline instruction has had on my classroom. After a challenging lesson in truss calculations, Dhaval told his classmates he planned to hug his math teacher the next time they crossed paths. Slightly confused, I asked him why. He replied that had it not been for his math teacher's effective instruction in his Algebra 2 course, he would have been lost in the truss calculation lesson that I had given. Dhaval went on to say that while he was in the math course, he failed to see relevance for the material learned but since enrolling in the *Project Lead The Way™* courses, he has applied the mathematical procedures to solve many problems.

A third criterion for effective professional development is a modern, flexible support system that is readily accessible and accommodates different learning styles. The *Project Lead The Way™* model provides an online Virtual Academy that is available to teachers upon demand and offers numerous lessons in middle school and high school curricula. The *Project Lead The Way™*

ListServ is available to teachers as a resource for technical assistance and as a forum to share ideas for advanced applications and tap into the expertise from their peers. Teachers can post questions on the listserv and will most likely receive a solution from another teacher, who could be from any where in the country, within 15 minutes. This system encourages camaraderie and fosters a professional environment that is often lacking in other professional development models.

South Carolina and other states offer *Project Lead The Way™* ongoing professional development during the fall and spring of the academic year. Through partnership agreements with Piedmont Technical College and Orangeburg-Calhoun Technical College, teachers receive additional professional training from statewide master teachers. The college partners provide equipment and materials. Teachers work together in small groups, assist one another in weak areas, and share best practices. Once again, the professional development is specifically aligned with the needs and interests of the teachers and the curriculum they teach. Technical support is also available for hardware and software challenges. These ongoing training and partnership agreements are organized through the South Carolina State Department of Education.

Finally, the certified *Project Lead The Way™* schools are subject to a certification process that involves the state university partner and the State Department of Education. This certification process occurs every five years and ensures that the schools deliver the curriculum to the standards established by Project Lead the Way. One of the criteria for Master Teacher status is that the teacher must teach at a Project Lead The Way™ certified school. Only *Project Lead The Way™* certified schools may administer the college credit portion of the end-of-course assessments to qualified students. Students scoring successfully on the national Project Lead The Way™ end-of-course college examination may apply for college credit at more than 30 four-year institutions across the nation and at an even larger number of two-year institutions.

In Closing

After six years of training high school teachers during the *Project Lead The Way™* Summer Training Institutes across the nation, I have heard overwhelmingly from teachers that they come away from the experience with a rejuvenated interest in teaching. After returning to the classroom, teachers reported that they felt more confident in the use of technology and better informed on current issues in science, technology, engineering, and mathematics.

The National Mathematics Advisory Panel recommends,"…teachers must be given ample opportunities to learn mathematics for teaching." I couldn't agree more. A well-prepared teacher must be given the tools, technology, and time to advance in their field. That is, teachers must understand in detail and from a more advanced perspective the mathematical content they are responsible for teaching and the connections of that content to other relevant disciplines. But it is important to note that even the best teacher preparation cannot overcome poor leadership and inadequate administrative support.

Many school districts decline to offer technology programs due to the high cost of equipment but in reality, technology programs provide real applications for mathematics and science while preparing the student for the workforce or post-secondary education. Because of funding issues, inequities in school programs exist across the nation, across the state, and even within the same city. Graduates from these schools compete in the same classroom at local colleges and state universities. I am fortunate to be employed by a district that recognizes the importance of professional development, the impact that technology has on education, and the impact of both on student achievement.

As you and your colleagues consider education policy, I hope you consider the recommendations of the Math Panel with regard to Professional Development. As my experience with Project Lead They Way shows, the ideas and concepts are sound and should be elements of any professional development effort, federal or otherwise.

Thank you again for this opportunity, and I look forward to answering any questions you might have.