Testimony of Montez King, Executive Director, NIMS
To the Subcommittee on Research and Technology of the Committee on Science, Space, and Technology

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Good Morning, my name is Montez King and I am the executive director of NIMS, which provides skill standards, credentials, and training frameworks for advanced manufacturing and related industries. I want to thank Chairwoman Comstock and fellow members of the Subcommittee for inviting me to speak about innovative workforce training programs that create a pathway to robust and successful STEM careers.

I want to start by emphasizing that the stakes are high. Over the next decade, 3.5 million manufacturing jobs likely need to be filled. The skills gap is expected to result in 2 million of those jobs going unfilled.[1] Contrast that economic growth with the fact that our talent pipeline is unsure **and** 10,000 baby boomers leave the workforce everyday.[2] There are 5.5 million disconnected young people between 16-24 who are currently out of school and not working. That is 1 in 7 young people.[3] Only 16 percent of American high school seniors are proficient in mathematics and interested in a STEM career.[4]

This leads into my first slide: **The Walking Dead Syndrome**
Most of us are familiar with this popular series. The framework is based on an overwhelming large majority of the world's population turned into zombies, wandering the earth in search of flesh from a few remaining survivors. This is a striking parallel to our college campuses. Our overwhelming large population of youth are wandering campuses like those zombies, in hopes of getting jobs that are scarce or rapidly evolving.

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[1] "The Skills Gap in US Manufacturing: 2015 and beyond," The Manufacturing Institute and Deloitte, 2015.
https://www2.deloitte.com/content/dam/Deloitte/us/Documents/manufacturing/us-pip-the-manufacturing-institute-and-deloitte-skills-gap-in-manufacturing-study.pdf
[2] Pew Research Center population projections:
http://www.pewsocialtrends.org/2010/12/20/baby-boomers-approach-65-glumly/

[3] Opportunity Nation: https://opportunitynation.org/disconnected-youth/
[4] U.S. Department of Education: https://www.ed.gov/sites/default/files/stem-overview.pdf

In today's economy, jobs are becoming more integrated, cross-discipline, and technology-driven. We can't just prepare kids for the jobs we have open today—we have to prepare them for the jobs that don't yet exist. As we build STEM education and training programs, we *must* focus on three key elements: expanding work-and-learn opportunities across the economy, creating education pathways that support students from middle school through career advancement, and engaging industry in the design and deployment of career-related education and training.

This leads into the next slide: **The Work and Learn Career Pathway Model**
This slide illustrates three (3) career pathways towards the same career goal, where work-and-learn yields the highest probability of success for students needing to prepare for 21st century STEM careers. No longer can students expect to land and be successful in a job if they are on a straight **vertical** academic path (i.e. just go to college). Conversely, students today need more than a **horizontal** path of hands-on experience. STEM students need BOTH education and hands-on experience contemporaneously interwoven together. This work and learn model is a collaboration of academics and hands on experience, maximizing your probability of success through a **diagonal** path.

Work-and-learn programs are proven models of workforce preparation and successful student learning because they connect theory-based classroom instruction with career development and integrate structured education and training with work experiences. Examples of work-and-learn programs include apprenticeships, internships, work-study, mentorship, job shadowing, and co-ops. Work-and-learn programs can be applied at multiple career levels and job functions and may be tailored for participants ranging from middle school students to mid- career employees. Work-and-learn programs allow employers to help students and workers gain and demonstrate necessary "hands-on" skills, competencies and other common employability skills (e.g., teamwork and dependability) that are necessary for workplace success.

What's more is that work-and-learn programs can connect to form a seamless pathway. An example of this seamless pathway is for a NIMS precision machining student. Students can complete a work-study program in high school, so they graduate with a diploma, and two

industry-recognized NIMS credentials in machining. These credentials enable students to transition into an apprenticeship program, which provides them with additional education and college credit, industry-recognized credentials and paid work experience. Industry-recognized credentials—which are competency-based—validate a students learning and acquisition of knowledge and skills, and act as the connector from and between education and training programs and the workplace.

The final key component of STEM education and training is industry engagement and leadership. Simply put, we cannot design education and training programs without industry guiding us. The voice of employers is imperative in educating individuals to industry standards and ensuring training programs are adequately preparing individuals for the workplace. Industry-recognized skill credentials are vehicles for ensuring the link to industry.

In conclusion, work-and-learn pathways incorporating industry-recognized credentials are the surest way to prepare the STEM-ready workforce of the future. I encourage policymakers, employers, educators, and workforce professionals to support these innovative approaches that impact not only student success, but also the prosperity of local communities, and our nation's economic competitiveness.

Thank you for your time.