



Pre-College Engineering Education

A division of the American Society for Engineering Education

P12 Engineering Education: ASEE's Call to Action and Why P12?

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What is P12 Call to Action?

The P12 Call to Action is the result of two years of work by a board-appointed committee of engineering education experts. These experts were all ASEE members, and included: current and former P12 teachers; professors of engineering, engineering education, and education; Deans of colleges of engineering and technology; and business leaders. Their charge was to develop a strategic plan to highlight and strengthen ASEE's positive impact on engineering education for preschool through high school learners in formal (e.g., schools) and informal (e.g., museums) learning environments. Their first step was to communicate to ASEE members, most of whom focus on college-level engineering education, that ASEE is also grounded in P12 education. They wanted to let the ASEE community at-large know that ASEE members, including and outside of those in the Pre-College Engineering Education (PCEE) Division, have made significant, positive contributions to P12 engineering education (e.g., in the areas of research on teaching and learning, teacher professional learning, curriculum development, and standards development). Further, the ASEE organization is gaining an increasingly stronger voice on the national stage with respect to practice and policy for P12 STEM and engineering education. A second step by the committee was to suggest to the ASEE community that there is more work to be done in P12 engineering education, and that ASEE is the center of expertise to lead this work.

Why P12 Engineering Education?

One of the reasons to support P12 engineering education is that it can seed awareness, understanding and excitement for engineering at an early age for the diverse students enrolled in P12 education. There are



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two points that are important to make here: 1) reaching students early, and 2) reaching diverse students. First, the P in P12 stands for preschool. We mean early! Preschoolers, kindergarteners and elementary students represent the youngest learners who can begin to understand what engineers do and how they can solve problems and positively impact people's lives. Children develop this understanding through meaningful engagement in engineering design challenges – thinking, collaborating, creating, communicating, trying, failing, trying again. Not all of these young people will turn out to be engineers; but *more* of them will if we present them with meaningful learning opportunities in engineering education in schools, museums, camps, and clubs. For those who don't become engineers, their participation in P12 engineering education will help them become better citizens who have a rich understanding of how technologies are developed, improved, and replaced, and who have practiced creativity, perseverance, and other habits inherent in engineering.

Our second point relates to a persistent challenge in engineering: our field is not yet representative of the population of students in P12 education – a population that is both full of potential and impacted by the technologies engineers design and analyze. P12 engineering education aims to reach *all* students, not only encouraging *more students* to become engineers, but also encouraging *more diverse students* to become engineers. This benefits students who learn that engineering is a rewarding career, even if, prior to their first design challenge in elementary school, they did not know what an engineer was. It benefits society, too: a more diverse engineering community identifies more problems worth solving and generates a more diverse array of solutions those problems.