

PARTNERSHIPS WITH INDUSTRY AND HIGHER EDUCATION

A successful school development organization, High Tech High, was originally conceived by a group of civic and industry leaders trying to overcome the challenge of finding qualified individuals for the high-tech work force. This initiative is part of a growing trend of industry and higher education partnerships with the K – 12 education system. Across the country policymakers, educators, business and community leaders are collaborating to increase student postsecondary participation and achievement in STEM.

The Ohio STEM Learning Network (OSLN) is one such example. OSLN is a state-level public-private partnership that includes Battelle, Ohio Partnership for Continued Learning, Ohio Business Roundtable, Ohio Business Alliance for Higher Education and the Economy, Cleveland Foundation, and the Teaching Institute for Excellence in STEM. OSLN works to enhance STEM teaching and learning capacity, accelerate existing and emerging STEM initiatives and create a network that promotes and connects STEM initiatives. While Ohio provides an example of a more comprehensive partnership, several states are seeing the benefit of involving industry and higher education in efforts to enhance STEM education. These partnerships allow the different sectors to come together to form a common vision, provide access to postsecondary opportunities and leverage each other's strengths.

Align expectations and preparation

Historically, there has been a disconnect between K – 12 and higher education, as well as between education and industry. These new partnerships allow all three to come together and not only articulate what the pipeline should look like but also build it. Several states are working to connect student preparation to postsecondary demands. This involves revising academic standards, aligning high school graduation requirements to prerequisites for college admission and creating longitudinal data systems that track students from preschool through higher education. In many cases industry has help inform this work. In Arizona, the P20 Council worked with industry to define the education and training needs in key and emerging fields.

Remove obstacles

These partnerships have been effective in increasing accessibility by removing some of the structural barriers. Early college initiatives, such as North Carolina's Learn and Earn, bring higher education to the K – 12 setting. In this program students can earn two years of transferable college credits while in high school. Industry needs are addressed as many of the schools in the program have a STEM focus tied to local economic development needs.

The connection between business and education is fostered by programs that provide both teachers and students with opportunities to apply their STEM knowledge. Kentucky's KySat is a joint enterprise of public organizations, private companies, colleges, and universities that engages students in the design, building, launching, and on-orbit operation of small satellites.

Asset Sharing

Industry and higher education have resources that enhance STEM education beyond just monetary assets (although the monetary assets have been helpful as Texas's STEM initiative was launched with \$55 million in private funds in addition to state funding.) Notably, teacher training programs in higher education have a direct impact on the quality and quantity of teachers in STEM disciplines. Industry also augments teacher quality through initiatives such as the Merck Institute for Science Education that provides professional development opportunities (among other things) that deepen teachers' knowledge of science.

A growing concern about the competitiveness of the nation's future workforce has fostered several STEM education partnerships in the last decade. While the benefits of industry and higher education partnerships is beginning to be demonstrated the potential in a full scale statewide collaboration has yet to be fully realized.