

2018

Excellence in Action Award

William J. Pete Knight High School

Digital Design and Engineering Academy

Science, Technology, Engineering & Mathematics Career Cluster

OVERVIEW

The Digital Design and Engineering Academy at the William J. Pete Knight High School in Lancaster, CA, was launched in 2010 to provide learners with rigorous and integrated academic and technical coursework, in addition to the full continuum of work-based learning experiences. Learners can earn college credit for both engineering and general education/core academic courses through articulation agreements and Advanced Placement.

The engineering program of study benefits from partnerships with industry leaders, which result in internships with local private and public partners, such as Northrop Grumman, Edwards Air Force Base, the Air Force Research Laboratory, Lockheed Martin and NASA. These internships often can lead to employment opportunities upon graduation.

Student Demographics (396)	Percentage
Male	65%
Female	34%
Low Income	73%
Minority	81%
English Language Learners	42%

VALUABLE INDUSTRY AND EDUCATION PARTNERSHIPS

The high school is located in the northernmost section of Los Angeles County, home to a number of aerospace and research entities, which creates many opportunities to foster valuable partnerships. For example, the Northrop Grumman Corporation High School Involvement Partnership program allows seniors to participate in internships and have a company mentor. Partners also provide pathways to future employment. Another terrific partner is the Air Force Research Laboratory, which provides equipment and annually helps prepare students to compete in the Unmanned Aerial Vehicle Challenge. Learners have competed in Australia the past four years, placing third twice and first once against teams from

Australia, China, Malaysia, Poland, New Zealand and the United States.

Partnerships with educational institutions are also core to the Academy. Through agreements with postsecondary education, learners who successfully complete either Principles of Engineering or Digital Electronics are eligible to receive articulated credit at Antelope Valley College. Likewise, these courses are part of a Statewide Pathways template, which means that coursework is accepted at many community colleges throughout the state of California. Further, students who successfully complete Project Lead the Way end-of-course assessments are eligible for transcribed credit through the Rochester Institute of Technology.

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WORK-BASED LEARNING THROUGH SERVICE ABROAD



In addition to the required work-based learning experiences, the Academy offers an incredibly unique learning abroad experience that incorporates service and hands-on learning. Global Illuminations, a non-profit organization that was started by an Academy parent, specializes in setting up makerspaces in high need-areas.

A makerspace is a collaborative work space designed for making, learning, exploring, sharing and providing hands-on learning. For one of their many projects, Academy students partnered with Global Illuminations to help a school in Costa Rica install a makerspace with functioning tools and then teach the local students how to use them.

Impressively, Academy students also took the lead in developing a partnership with Grid Alternatives, a non-profit organization that brings reliable energy through solar power technology to communities that are not on the electrical grid. The Academy students assisted a school in Nicaragua and plan to travel to Puerto Rico in summer 2018 to help with recovery efforts after Hurricane Maria.

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ENCOURAGING WOMEN IN ENGINEERING

According to a 2012 report by the Congressional Joint Economic Committee, only 14 percent of U.S. engineers are women. To address this gender gap, the Academy has hired female instructors and created events focused on young women in science, technology, engineering and mathematics. As a result, the 2016-17 class had a 16 percentage point increase in enrollment of female learners.

A partnership with California State Polytechnic University — Pomona is also assisting these efforts. The university offers female students campus visits that include motivational speakers, hands-on learning and competitions. Alumna of the Academy also host lunches once a quarter to speak with female learners about college and their experiences working in a male-dominated field.

“Digital Design and Engineering classrooms intentionally cultivate a sense of wonder, the excitement of discovery, and the satisfaction of trying hard.” — Ed Dennis, Deputy State Superintendent, Oregon Department of Education

Success by the Numbers



100%

Participated in Work-Based Learning



97%

Graduated High School



85%

Enrolled in Postsecondary Education



22%

Earned an Industry-Recognized Credential



39%

Earned Postsecondary Credit