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Schools and industry matching students with jobs.

Focus on career skills

Hector Hernandez Jr. Nov 1, 2018



San Andreas High School agricultural business student Jason Nolasco explains to Gissel Ortega the lighting and hydroponic equipment his class is using to grow lettuce in the school's advance farming technologies lab.

Hector Hernandez Jr.

New and developing technologies are quickly changing industry and the career opportunities they provide and, to ready students for the demands of a variety of industry fields, local school districts are bringing those technologies into the classrooms through a number of career preparatory programs, often with the assistance of industry leaders themselves.

Not only are the schools bringing more technology and industry focused skills to the students but they are exposing students to career-minded courses much earlier.

Where high school electives were once the first catalyst that sparked students' thoughts about jobs after school, elementary schools now serve as the gate to career pathways that link students to fields further explored in middle school and industry skills sharpened in high school.

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Starting early

In accordance with County Schools' initiative to support student learning from Cradle to Career, San Bernardino City Unified and Redlands Unified school districts are each developing career pathways that link classroom instruction to 21st-century skills needed by the workforce and linking elementary, middle school and high school programs.

As stated by Brian Bartlett, teacher of Citrus Valley High School's award-winning robotics and engineering design program, the college and career programs are "designed for both ends of the spectrum, the students who are going to college and the students who are not going to college but need a job. Every student will hopefully have a career whether they first go to college or start directly after graduating."

Before Highland's RUSD students get to Citrus Valley they are exposed to fields such as rocketry, engineering, robotics, 3D printing and electronics in Beattie Middle School's STEM-focused electives taught by Robert Foster.

The aim is to give students a good foundation for STEM fields by teaching the basics through engaging activities.

“We hit on all four STEM areas,” Foster said, meaning science, technology, engineering and mathematics. “In rocketry they’re taking measurements, clocking time and calculating distance and speed, they’re learning Newton’s law of motion and calculating how much force is being applied. In 3D printing they use online program TinkerCat to the learn basics of building a design and programming.”

“The point is to get kids engaged in the idea that in the real world if you’re going into science or mathematics it’s not just a single focus anymore,” he added. “All the career fields pull from different disciplines. If I want to be an engineer of robotics I have to understand technology, mathematics and the principles of design and testing.”

The electives, which had been for seventh- and eighth-graders, were expanded to include sixth grade this year. Beattie has also introduced a new option with a GIS program taught by Robby Foster, Robert’s son.

The class uses GIS programs from Redlands-based Esri to teach the data-based technology that is used for a variety of applications from the geological and environmental industries to marketing.

“We’re introducing them to the technology and industry we have in our backyard,” Robby said. “Besides gathering interest — because middle school is a formative period where children start to develop their interests, likes, hobbies and other things they carry on into adulthood — it’s important to help them explore options and encourage them to pursue careers in fields related to gathering data and developing maps.”

The program also helps students gain spatial reasoning skills teaching them how big and how small the world is at a time when many students have difficulty locating key landmarks on maps.

Other benefits to bringing career technical education on campus is that it supports core subjects while engaging students’ interests.

“Middle school is a tough gig for a lot of kids and every kid needs a place to land and to have something that’s important to them, something to look forward to,” said Robert. “For a lot of kids, it’s drama or band. For a select group, this is a good fit.”

“I’ve had kids go into engineering because of the interest they develop here,” Robert said.

“The kids that go through the pathway want to be at school,” said Curtis Middle School engineering teacher Chris Petriccione. “So we work with other teachers to get their lessons connected to what we’re teaching, that’s our goal linking their learning to what they’re already learning and to what they’ll use in future careers.”

According to San Andreas High School Principal Ed Hensley, the same is true of high school. Participation in the school’s advanced farming technology, radio-electronics and GIS programs has helped improve student attendance.

At Citrus Valley, students in the pre-engineering, engineering, advanced computer-aided design (CAD) and robotics programs learn the technical drawing and CAD programming systems used in engineering and manufacturing industries to design and manufacture items using computer-controlled machining equipment.

Students have used CNC (Computer Numeric Control) machines and 3D printers to design and build award-winning robots for the national Skills USA engineering competition. Robots were designed to complete urban search and rescue challenges. Citrus Valley’s team won state championships in 2016-18 and earned the silver national medal in 2017.

“Students can get that entry-level job knowing the software or they’re well-prepared for college engineering courses,” Bartlett said.

Citrus Valley students can also learn computer coding through the school’s C-STEM course.

“The world is changing it’s no longer enough to have a high school diploma or a college degree. You have to have a skill set,” said Stephanie Lock, RUSD coordinator of college, career and special programs. “We’re starting younger with the skills, exposure and exploration so by the time they get to high school students might have a little more focus on where they think they want to go after high school so they can focus their path.”

Industry support

A crucial part to developing these career-focused programs has been input and support from the very industries for which the schools are prepping their students.

San Andreas' farming technologies program teaches numerous computer, agricultural and soft skills in its hydroponics lab with Click & Grow Smart Gardens and consultation and partnerships from Night Owl and Technical Employment Training.

Besides learning hydroponics and other farming technologies, students learn entrepreneurial, marketing, writing and photography skills as they grow plants for sale and create a website for a burgeoning business.

San Bernardino and Redlands school districts have each partnered with Garner Holt Productions, the world leader in animatronics attractions, for engineering and animatronics pathways. Garner Holt Productions began by teaming with Bing Wong Elementary in Highland in 2016 and on Oct. 22 opened an AniMakerSpace at Franklin Elementary in Redlands. The space acts as an all-inclusive shop class where students learn all the skills and technologies used in animatronic entertainment — sewing machines for clothing the figures, clay modeling, CNC machining, 3D printing, vacuum forming and laser cutting.

All are available to inspire student creativity and hands-on learning.

Bringing these expensive industry machines onto an elementary campus would not be possible without industry support, such as that from Garner Holt Productions, said RUSD Superintendent Mauricio Arellano.

Technical Employment Training

Technical Employment Training, which teaches manufacturing skills and certifications in partnership with County Schools Regional Occupational Program (ROP), has helped establish manufacturing programs at Bing Wong Elementary, Norton Elementary, Curtis Middle School and Indian Springs High School.

The Indian Springs' machining lab — complete with Haas Automation Inc. CNC machine, lathe and mill — was opened in 2014 in partnership with Technical Employment Training.

Technical Employment Training itself was created in 2010 by President of Operations and Training Bill Clarke, Board Secretary Donald Averill, County Schools ROP Administrator Kit Alvarez and Mike Gallo, SBCUSD board member and president of Kelly Space & Technology, to put people back to work by developing a workforce skilled enough to attract manufacturing companies into the San Bernardino area.

“We had to address in San Bernardino a few problems: We were under bankruptcy and we had a large population of people out of work and a school system that was not graduating very many students,” Clarke said.

In 2010, the SBCUSD graduation rate was 62 percent, well below the 2017 statewide average of 82 percent. San Bernardino’s graduation rate is now 89 percent, thanks to the district’s efforts under leadership of Superintendent Dale Marsden.

“What was happening in San Bernardino was people didn’t know where to go. They’re on the street, on unemployment or welfare. In San Bernardino about 54 percent of the population was on some sort of government assistance,” Clarke added. “We have to reduce that so when people look at this community they see we have a skilled workforce and are willing to come back to San Bernardino to produce a product. Companies will move to areas where there is a workforce.”

“We focused on the manufacturing trades because there’s still a strong manufacturing base in San Bernardino County even though the economists were telling us that manufacturing was going away,” Averill said. “They didn’t realize it wasn’t going away just experiencing a shift in the skill levels.

“You will not find anyone in manufacturing today that is just sitting at a bench putting nuts on bolts hour after hour after hour. The person that’s going into that field has to be a lot more skilled.”

About that same time Fontana Unified School District decided to stop supporting its manufacturing ROP program making the machines and curriculum purchased and developed with public funds available, according to Alvarez.

Through a group effort with County Schools ROP, Kelly Space & Technology, San Bernardino International Airport Authority and County Department of Workforce Development and Haas Automation (makers of CNC and other machining equipment) the non-profit center was

created.

Since its creation Technical Employment Training has placed more than 400 students in manufacturing jobs at a placement rate of 89 percent.

Many of these students were veterans retooling their skill set or they came on recommendations from Welfare Department and Department of Workforce Development with a few who were homeless while taking the program, according to Alvarez.

Because of the dire and immediate need for work in many cases, a point of emphasis was to launch an accelerated program that would put people to work quickly.

It's a six-month program in which students graduate with two industry certifications — a national certification in bench and lathe (providing the industry necessities of math, blueprint reading and quality-control skills) and a second certification in the student's chosen focus.

"The second thing we did is we started working with the San Bernardino city schools to develop manufacturing pathways in the local school system from high school, middle school and now elementary schools," Clarke said. "We're training in two areas of focus — elementary to high school and adult education. Where driving the technology and skill levels in San Bernardino so the industries will start coming back to San Bernardino. It takes a number of people to change the economics of a community, Gallo and Superintendent Dale Marsden are behind this. We just happen to be one little cog in the wheel involved in changing how school pathways work to meet skill demands."

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