

# HVAC program at Dulaney High introduces students to a thriving trade

Two years ago, Hailey Brennan was like many American 14-year-olds: knowledgeable about her friends, her schoolwork and her favorite music, but clueless when it came to making the most basic repairs around the house.

"I didn't even know how to use a power tool," she says.

Today, the Dulaney High School junior is a skilled carpenter and electrician, a certified air-conditioning technician and a contractor-in-the-making who could find herself making \$70,000 a year by the time she's 21 — all without having to attend college.

The Lutherville 16-year-old is one of 104 students enrolled in the heating, ventilation and air-conditioning program at Dulaney. The two-year course of study, offered at an affluent Blue Ribbon School ranked among the nation's best for academics, is changing perceptions about the value of trade education.

The only program of its kind in Baltimore County — and the only one of Maryland's 13 such programs to be offered at a non-technical high school — the sequence has equipped hundreds of students to enter a high-paying field that's enjoying a hiring boom expected to last well into the next decade.



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Training in the trades is growing nationwide as schools add programs to meet the need for skilled workers.

SkillsUSA, a nonprofit that partners with schools to promote career readiness works with more than 18,000 teachers and 300,000 students at 4,000 schools. Spokeswoman Karen Kitzel says the organization has grown each year for a decade.

John Bonomo teaches HVAC to 60 students at Harford Technical High School in Bel Air, and more in the apprenticeship program at Harford County Community College.

About 80 percent of his graduates end up working as HVAC technicians, he says. Many of his apprentices at HCCC are college graduates over 30 who couldn't find work in their original fields.

"There are a ton of jobs out there for people who are willing to work and have the right attitude," he says.

Students at Dulaney have technology education, engineering and HVAC classes to choose from.

More than a dozen now work in the HVAC industry full-time, while dozens more have completed internships, worked in summer jobs or gone on to pursue careers in related fields.

Students say the program has affected their self-images as much as their career plans.

"I can build a bookshelf or hook up an electrical system [now], and it's like tying my shoe," says Brennan, a petite fan of classic rock who plans to become a mechanical engineer. "It's satisfying to be able to diagnose problems, develop a plan and carry the plan to completion."

Technical education has always had an unaccountably bad rap, says Jamie Gaskin, the Dulaney teacher who took over the fledgling HVAC program at Hereford High School in 2011 and has driven its growth since.

Gaskin had seven students that first semester, but the course outgrew Hereford's facilities and was moved to Dulaney later that year. Enrollment has grown nearly fifteen-fold in the time since.

The former art studio and storage warehouse that houses the program makes an excellent training ground in the trades, Gaskin says, in part because HVAC demands a broad array of competencies.

"You need to know plumbing, electrical and carpentry, but also how to work with sheet metal, refrigerant lines, thermostats and so on," says Gaskin, a third-generation master of the trade. "There's also the theoretical side, understanding the chemistry and physics behind it, and learning about environmental impact.

"It's an intellectual challenge for these kids, as well as a way of working with their hands."

Gaskin, a burly 37-year-old, got his start at a tender age.

His grandfather, an original faculty member at Western High School of Technology in Catonsville, was an HVAC master who taught at Associated Builders and Contractors, a trade association.

His father also worked in the trade and taught at the association.

Gaskin was in his teens when he started teaching in the same apprenticeship program. After two tours of duty in Iraq with the Army, he decided to find a way to combine teaching and the family business.

When the man who ran the tiny Hereford program quit in 2011, Gaskin was hired.

"I was in the right place at the right time, and I can't tell you how happy I am about that," Gaskin says.

Gaskin, who chairs Dulaney's engineering and technical programs, commutes to Timonium from Gettysburg, Pa.

"I drive an hour and 20 minutes each way to work, and I look forward to what I do every day," he says. "I wouldn't trade it for anything."

He stood before an advanced class one recent morning and led a back-and-forth on a procedure all HVAC technicians must master: the "evacuation" of refrigerant lines.

The chemicals involved — chlorofluorocarbons, or CFC's — can be hazardous, one reason the federal Environmental Protection Agency requires technicians to be certified in the practice. (Most of Gaskin's upper-level students have passed the exam, with his encouragement.)

Evacuation is the process of removing unwanted moisture from refrigerant lines before they can be "charged," or filled, a procedure technicians measure with a micron gauge.

The students lean forward at a lab table as Gaskin talks them through the steps.

"If the vacuum doesn't hold at 1,000 microns after three passes, what does that mean?" Gaskin asks.

"There's a leak in the system," a student replies.

"Why do we repair leaks?"

"They're illegal and bad for the environment."

The students don safety glasses and head to the adjoining warehouse for the hands-on portion of their education.

The students are required each year to design and build an air-conditioning system to cool the classroom, a project in which they must draw on a variety of skills: sheet-metal fabrication, electrical wiring, the handling of coolants.

They break into three groups: one to measure and cut sheet metal for a duct system, one to make and hang the ducts overhead, a third to shape, connect and install the five-eighths-inch copper tubing that will carry the refrigerants.

Senior Zach O'Neill brings Gaskin a length of pipe he's trying to bend to 90 degrees.

Gripping it in a clamp and twisting hard, the teacher shows him how to create the crook without leaving too much ribbing in the metal.

"Harder than it looks — thanks," O'Neill says, and lumbers off.

It's one step in a project that takes a full school year. The classroom is to be air-conditioned by the summer, when Gaskin runs a leadership camp and coordinates meetings between his HVAC students and representatives from about a dozen local businesses.

Shayla Myers is an account executive with Johnson Controls, an international company with an office in Baltimore County. the company creates transportation systems and "intelligent buildings."

Myers has met with Gaskin's students and come away impressed.

"There's that handful of teachers who go above and beyond, and Jamie's one of those," she says. "He goes out of his way to expose them to opportunities they would never get otherwise."

The industry recognizes program graduates as second-year apprentices. With three more years of training, they're eligible to work anywhere in the United States as licensed journeymen. Students may also earn up to 21 credits through the Community College of Baltimore County.

And they have the opportunity to work with SkillsUSA, through which trade students showcase their work at the state and national levels.

Two of Gaskin's advanced students work more than 20 hours a week for Statewide Contracting Services Inc., a local company.

Program graduates are in position to cash in on an industrywide shift: As more HVAC technicians reach retirement age, the field is projected to experience employment growth of 14 percent through 2024, according to the U.S. Bureau of Labor Statistics.

The pay scale for HVAC technicians ranges from nearly \$13 to more than \$34 per hour. Workers can double or triple that with overtime.

For top technicians, Gaskin says, that can take earnings well into the middle six figures.

Brennan, an elected officer of the Maryland chapter of SkillsUSA, travels the state giving talks on the advantages of trade education.

She recently introduced herself to Baltimore County schools Superintendent Dallas Dance. He decided to spotlight the program in a video for the schools' news service.

Brennan says she's proud of everything from the picnic tables and shelving she has helped install at Dulaney to the sets she helped build for the coming winter play.

"I like knowing how to do things," she says.