

N.J. schools are struggling to fill vacancies for math, science and tech teachers. Here's why.

By [Tina Kelley | NJ Advance Media for NJ.com](#)



New hire Tim Mure teaches AP Physics 2 at Glen Rock High School.

While a shortage of teachers is hitting schools in New Jersey and across the nation, teachers in the STEM fields (science, technology, engineering, and

math) are some of the hardest new hires to find, superintendents, principals, and other education officials said.

They tell stories of freshly-minted physics teachers with multiple offers and districts offering hiring bonuses and jumps up the pay scale to qualified STEM teaching candidates. In at least 10 high schools, substitutes or certified teachers in other disciplines manage STEM classrooms and administer tests while their students take online courses. Six need such coverage for chemistry, three for physics, one for biology, and one in environmental science, according to Robert Goodman, head of [The New Jersey Center for Teaching and Learning](#).

"It's the worst it's ever been right now," said Goodman, a former state Teacher of the Year known for a Physics for Freshman program at Bergen Tech Teterboro, which led the state in students taking the AP Physics exam.

The shortage puts New Jersey — birthplace of the lightbulb, [air conditioning](#), [bubble wrap](#), [radar](#), and the Pfizer vaccine — at risk of losing its status as a leader in technical innovation.

While STEM faculty was scarce even before the pandemic, finding them "has become exponentially harder," said Karen Bingert, executive director of the New Jersey Principals and Supervisors Association, a membership organization for school leaders. STEM teachers need special certifications and training in content, and students are now required to complete certain career readiness classes requiring technology teachers. "How are schools supposed to graduate students meeting that specific requirement when teachers with the requisite certifications simply cannot be found?" she said.

Brian Drelick, STEM supervisor at High Point Regional High School in Wantage Township, said it would be difficult for the state to provide enough young workers without well-staffed STEM classes. "If we have to close programs or if there are not enough physics sections," he said, "or if you have packed anatomy and forensics and statistics classes...we're not turning

them on to college and careers" in STEM.

Scott Taylor, superintendent of the Township of Union Schools, said he found only two candidates for a high school science job, even though the district's starting salary ranks high in the state. Union started recruiting in mid-April, putting out ads and going to a recruitment fair. If Taylor can't fill science positions by early August, he will have to see if any of his current teachers would take on additional periods for more money.

In March, he found two top-tier math teachers from Kean University's program for women in STEM interested in teaching.

"We're treating them like prized college athletes," he said, "inviting them to school events, sometimes texting them to check in on how things are going. I feel like [football coach] Greg Schiano at Rutgers, staying on top of my recruits."

Michael Fanelli, principal of the Pathways in Technology Early College High School in New Brunswick, recently interviewed a promising physics teacher candidate who said upfront that he already had multiple offers.

"I just got a text back from our HR director saying he accepted an offer in another district," he said. "It's a fear a lot of us have."

Recent graduates skilled in tech and STEM may favor working from home rather than in classrooms, he noted.

The shortage has numerous causes. Teachers earn only [78.6 cents on the dollar](#), compared to other college graduates, with stagnant wages over the past 20 years. Statewide, fewer people are starting programs to become teachers. There were 13 enrollees for every 1,000 students in the state in 2009, but that fell to 6 in 2018. And fewer of those enrollees are completing them – five for every 1,000 students in 2009, falling to less than three in 2017, according to a [report by New Jersey Policy Perspective](#), a thinktank.

Meanwhile, STEM occupations are expected to [grow more than twice as fast](#). **Their growth is projected** at 8% by 2029, compared to all occupations, which are expected to grow by 3.7%, according to a 2021 report from the Bureau of Labor Statistics. So qualified STEM graduates will have wider options than their peers, and they may be drawn to jobs that pay more and are less stressful than teaching.

For now, New Jersey also requires teachers to pass the EdTPA assessment, used in about a dozen states, but which some candidates and teacher organizations find [expensive and onerous](#), and one [group of researchers](#) found unwarranted and scored in a [potentially discriminatory](#) way. On Thursday, a [bill to remove that requirement](#) passed the Assembly's education committee and has already passed out of the Senate's education committee.

The state Senate [passed a bill](#) last year to remove another disincentive to recruiting teachers during a time of shortages, the state's requirement that teachers must live in New Jersey. The Assembly did not take it up.

In the meantime, STEM classes are becoming more popular. Nationally, the number of students taking physics grew 12% from 2013 to 2019, while the number of teachers nationally increased by only 2%. And institutions that train physics teachers are not keeping up with the demand.

The Center for Teaching and Learning, a nonprofit that trains STEM teachers and provides free open-source curricula, is trying to assist by helping existing teachers specialize in shortage areas. It is one of only nine institutions of higher learning nationally to train more than five new physics teachers a year. For the last five years, they've produced an average of 25, Goodman said, by using online courses that help teachers in other subjects become certified in disciplines like physics. He said the center charges \$165 a credit, while Rutgers [charges \\$757 a credit](#).

If a teacher in a scarce specialty leaves mid-year, schools must choose between closing the class or hiring a substitute to proctor tests and manage

the students while they attend online courses.

Carl Blanchard, K-12 science supervisor at the Glen Rock School District, said physics positions have been the hardest to fill. One teacher left at the end of the summer last year, and existing staff had to take on more classes, he said. Then midway through this year, another physics teacher left, and only one person applied for that job. Blanchard has also found surprisingly few applicants for biology and middle school science positions.

This spring, when he needed a six-week solution to a physics vacancy, he used a remote instructor from the Center for Teaching and Learning, which is supported in part by the New Jersey Education Association. "It allowed kids to stay on track and maybe catch up a bit, to prepare for the AP exams they just took."

He has also sent a middle school teacher through the center's program to certify physics teachers. "We're trying to future-proof our department a little bit," he said.

Bingert, of the Principals and Supervisors Association, said solutions to the shortage could come legislatively. She hopes to see scholarships and tuition relief programs for future educators and teacher training academies, where high school students interested in teaching could earn college credit in pre-education academies.

She also advocates "taking a fresh look at certification requirements" for teaching candidates who are missing mandated test scores or grade point averages by a small amount and ensuring that requirements for STEM teaching certification reflect what is needed in the schools.

In January, Gov. Phil Murphy [signed a law](#) allowing retired teachers to return to the classroom for two years while still receiving their pensions to alleviate teacher shortages in critical need areas.

Drelick, the supervisor at High Point, searched for six months to fill a technology teacher vacancy and had to cover the class himself rather than close it. He said it's up to STEM teachers, in part, to help create future STEM teachers.

"I think it starts with us, in the K-12 setting, talking to our current students more about ... the benefits and joys of teaching." Too often, teachers are talking to their students instead about becoming engineers, or doctors, or statisticians.

"I don't think we ever really stood on the ground and said, 'I really think you should be a teacher. This is why you should teach Tech Ed!'"

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