



# Building Your STEM Teacher Workforce from Within

By Robert Goodman, Ed.D., Executive Director, NJCTL

It's that time of year when planning is underway for the upcoming school year. But what happens when there are unfilled vacancies and a declining pool of qualified candidates? For the past few years, school administrators have faced the situation of trying to fill an increasing number of vacancies with fewer and fewer candidates.

While science and mathematics are arguably among the most important subjects to teach, they are also the most difficult subjects for which to find a qualified candidate (Feder, 2022). Teachers have left the profession in droves, and those who remain are able to pick and choose the most desirable positions (Querolo, Ceron & Rockeman, 2022). This leaves school administrators scrambling, and students bearing the brunt of this teacher shortage. Now, there is a solution.

Districts have a new source of science or mathematics teachers, and the opportunity to become a New Jersey teacher just became available to many more people, including ESPs, potentially changing

their lives, as well as the lives of their future students. This is because the New Jersey Center for Teaching and Learning (NJCTL) was recently approved by the NJDOE to offer new Alternate Route programs in physics, chemistry, biology, and mathematics.

There are two pathways for prospective teachers. The first is a traditional Alternate Route, which requires a degree (or 30 credits) in the subject and a GPA of at least 3.0. The second pathway takes a revolutionary new approach that opens this opportunity to anyone with a bachelor's degree in any subject, with any GPA.

That means that a person's choice of major, or the GPA they earned, from a bachelor's degree they may have earned long ago need no longer hold them back (Overschelde & López, 2018).

These Alternate Route programs are modeled after NJCTL's successful Add-On Endorsement programs, which have made the organization a national leader in producing new STEM teach-

ers (PhysTEC, 2023), having produced 422 in the last decade. These programs are designed to teach current teachers of any subject the content, and how to teach the content, of science or mathematics. They assume no prior knowledge; everything teachers need to know is taught in the program. This is just what was needed in the revolutionary new Alternate Route programs.

The courses that comprise those programs are all 100% online and asynchronous, so candidates can start anytime and proceed at their own pace. Marrying together the Shortage Area regulations and these proven, successful courses led to this new approach to Alternate Route (NJDOE, 2019).

Candidates take online, asynchronous coursework to learn the subject and pass the required Praxis exams. Their GPA in this 15+ credit post-baccalaureate program replaces the GPA from their bachelor's degree, so if they earn a 3.0 or better, that former GPA obstacle has been eliminated.

Then, they get their CE and take the NJCTL Teaching Methods course, to fulfill the requirement for 50 hours of pedagogy instruction before entering the classroom, while looking for a job. Once they pass that course and have a job, they enter the classroom. All the work they did to earn the CE counts towards their remaining required 350 hours, which they complete with additional asynchronous, online courses to learn how to teach their subject at the AP level. They are teaching and completing the program while earning the salary and benefits of being a teacher.

Upon completing their program, they are also awarded a Master of Science in Teaching and Learning degree in their chosen subject. NJCTL is licensed by the Office of the Secretary of Higher Education and is currently seeking accreditation (NJOSHE, 2023).

The science programs are 37 credits and cost \$6660 while the mathematics program is 38 credits and costs \$6840. Those prices are based on NJCTL's low graduate tuition rate of \$180 per credit. NJCTL can keep tuition low because of NJEA support and a commitment to focus spending on improving courses and programs, nothing

else. As an online institution, NJCTL does not need to own facilities, have sports teams, pay for landscaping and maintenance, etc. All our spending is completely focused on teaching and learning, which is consistent with being the only graduate school of education founded and supported by a union of public-school employees, the NJEA.

Because of NJEA's support, NJEA members receive a 20% discount on NJCTL tuition, reducing the tuition rate to \$144 per credit and the above program costs to \$5328 and \$5472.

In addition to providing solutions to address long-term staffing needs, NJCTL offers support to schools who face mid-year vacancies. All too often, administrators in this situation agonize over whether to collapse the class, shuffle the students onto other teachers' rosters, increase the class sizes for qualified teachers in the school, have an unqualified staff member or substitute teacher cover the class, or simply ask a qualified teacher to give up their planning time to cover the class. None of these scenarios is ideal.

If a district faces an immediate need for a teacher of science or mathematics, due to a leave or resignation, NJCTL

can help fill the gap temporarily so that student learning continues and other teachers in the school are not burdened in a way that could affect their own students' learning.

The NJCTL Leave Replacement program provides learning continuity until the teacher returns or a new teacher is hired or produced by an Alternate Route or Add-On Endorsement Program. This is accomplished through a combination of student versions of NJCTL online courses and Zoom sessions with students with an NJCTL instructor once or twice per week.

The district addresses classroom management by assigning a teacher or substitute to the classroom while NJCTL addresses the content. If there is no returning teacher, putting a long-term substitute in the class while enrolling them in an Alternate Route or Add-On Endorsement program provides the mid- and long-term solution to the staffing gap. In this case, NJCTL provides ongoing coaching for the substitute.

This new pathway to teaching represents an opportunity for an ESP in the district to move into a teaching position while providing the district a way to build morale by promoting from within.

## References

- Feder, T. (2022, March 1). The US Is in Dire Need of STEM Teachers. *Physics Today*. Retrieved January 27, 2023, from <https://physicstoday.scitation.org/doi/10.1063/PT.3.4959>
- PhysTEC (2022, December). 5+ Club Awardees. PhysTEC. Retrieved January 27, 2023, from <https://phystec.org/awards/five-plus-club-awardees/>
- Official site of the State of New Jersey. Department of Education (NJDOE). Administrative Code N.J.A.C. 6A:9A, New Jersey Educator Preparation Programs Current Rules. (2019, May 20). Retrieved January 27, 2023, from <https://www.state.nj.us/education/code/current/title6a/chap9a.pdf>; 6A:9A-5.6 CE Educator Preparation Programs for Documented Areas of Teacher Shortage
- Official site of the State of New Jersey. Office of the Secretary of Higher Education (NJOSHE). Institution Listing. (n.d.). Retrieved January 27, 2023, from [https://www.state.nj.us/highereducation/colleges/schools\\_sector.shtml](https://www.state.nj.us/highereducation/colleges/schools_sector.shtml)
- Van Overschelde, J. P., & López, M. M. (2018). Raising the Bar or Locking the Door? The Effects of Increasing GPA Admission Requirements on Teacher Preparation. *Equity & Excellence in Education*, 51(3-4), 223–241. <https://doi.org/10.1080/10665684.2018.1539355>
- Querolo, N., Ceron, E., & Rockeman, O. (2022, September 2). 2022 Teacher Shortage Driven by Low Salary, Covid Burnout. Bloomberg.com. Retrieved January 27, 2023, from <https://www.bloomberg.com/features/2022-america-teachers-great-resignation/>

## About the Author



**Dr. Robert Goodman**, serves as Executive Director of the New Jersey Center for Teaching and Learning. He was named New Jersey State Teacher of the Year in 2006 and received his BS Physics from MIT, MAT Physics from SUNY Stony Brook, and Ed.D. Science Education from Rutgers.