

# Addressing the Chronic Shortage of High-Quality STEM Teachers in the US

## ACTION

Members of Congress should:

- support appropriations matching the authorization levels for NSF's Robert E. Noyce Teacher Scholarship Program; and
- champion legislation improving program's effectiveness in recruiting and retaining qualified K-12 STEM teachers.

## US Shortage of Well-Prepared STEM Teachers

In 2019, only 20% of high school graduates that intended to pursue a career in STEM were prepared to succeed in their first year as college STEM students due, in part, to a dramatic shortage of qualified STEM teachers.

In the US, 8% of teachers leave the profession annually, and more than half quit teaching before reaching retirement.

Subject	Percent with major or minor and/or certification in main subject area
Physics	37%
Biology	65%
Chemistry	34%
Physical Science	38%

Source: Schools and Staffing Survey, 2012

## What is the NSF Noyce Program?

The program aims at increasing capacity to train qualified STEM K-12 teachers at higher-education institutions and to support Noyce Scholars (outstanding STEM students and teachers) to become qualified STEM K-12 teachers and leaders.

### 20 Years of Success



425  
institutions [1]



12,000  
Noyce Scholars [2]

Noyce scholars are more likely to teach in high-needs schools, [3] to stay in teaching careers longer [4] and have a very high impact on their student's learning compared to other programs.

Sources: [1] [nsf.gov/awardsearch](https://www.nsf.gov/awardsearch) [2] Sandra Richardson, NSF Program Director [3] Whitfield et al. *Teaching and Teacher Education*, Vol.103, 2021, 103361. <https://doi.org/10.1016/j.tate.2021.103361> [4] <https://www.brookings.edu/blog/brown-center-chalkboard/2021/07/16/the-robert-noyce-scholarship-and-the-stem-teacher-pipeline/>

### Current Barriers Limiting Effectiveness

- Low stipends and scholarships are a barrier for those who want to join the teaching workforce.
- Long loan payback conditions are a barrier for entry and may be ineffective at increasing retention in the teaching field.

**These provisions do not exist for other NSF-sponsored fellowships.**

## Steps to Increase Effectiveness

Direct NSF to pilot-test program initiatives aimed at increasing recruitment and retention of Noyce scholars, including:

- Adjust stipends and scholarships to be at least the cost-of-attendance or to match graduate research assistantships stipends at each institution.
- Eliminate any payback provision, making the fellowship a traineeship-based program, where Noyce scholars devote full time to advancing their training, including through teaching and other professional development activities, consistent with other NSF-sponsored fellowships.
- Evaluate the impact of programs with a report to Congress after five-years.