Recruiting and Retaining STEM Teachers—A Resource Brief

This brief is part of a seven-part series on challenges related to recruiting and retaining teachers from underrepresented backgrounds or with certain certifications. This series was developed as part of the R9CC Teacher Recruitment, Retention, and Recognition project with Illinois.

Dealing with the STEM Teacher Shortage

> Attracting and retaining excellent educators is one of the most important drivers of a well-functioning education system—a system that must prepare diverse students with complex needs to participate in today's knowledge-driven economy. However, a recent surge in the demand for teachers, alongside a diminishing supply and a steady rate of teachers leaving the profession, threatens students' academic and economic welfare.[1] Teacher turnover adversely impacts student achievement, school finances, and school improvement efforts.[2] Specific, targeted supports can help recruit and retain teachers in your district.

School districts throughout the country have faced increasing challenges with recruiting and retaining beginning STEM teachers. In 2017, turnover rates for mathematics and science teachers were 90% greater in the top quartile of schools serving students of color than in the bottom quartile.[3] A RAND Corporation 2021 survey found nearly one in four teachers, many of them STEM teachers, said they were likely to leave their jobs by the end of the 2020–21 school year.[4] The shortage of qualified STEM teachers perpetuates the socioeconomic achievement gap and threatens the nation's ability to compete globally.[5]

This brief provides resources that highlight examples of strategies, programs, and initiatives that assist states, local education agencies, and school districts with addressing the shortage of certified STEM teachers. This brief also includes additional resources related to recruiting, retaining, and supporting teachers.

Highlighted Resources

This section highlights examples of strategies, programs, and initiatives that help states, local education agencies, and school districts address the shortage of certified STEM teachers.

Title	Summary
Recruiting teachers in high-needs STEM fields: A survey of current majors and recent STEM graduates (2017)	The United States faces persistent shortages of appropriately trained middle and high school STEM teachers in high-needs fields, particularly physics, chemistry, and computer science. The American Physical Society, American Chemical Society, Computing Research Association and Mathematics Teacher Education Partnership surveyed more than 6,000 current and recent majors in STEM disciplines. This report presents survey findings and recommendations for recruiting STEM teachers.
Preparing and supporting STEM educators (2022)	This STEM Smart Brief from Successful STEM Education provides examples of research and promising practices for recruiting, preparing, and supporting effective STEM educators.
Three steps for creating and retaining a strong STEM teaching corps (2019)	This resource from the National Council on Teacher Quality details three essential strategies for recruiting and retaining STEM teachers, with examples from districts across the country.
100Kin10 initiative	The 100Kin10 initiative has identified the 100 challenges to preparing and retaining great STEM teachers and created an unprecedented roadmap that points the way toward transforming STEM education in America. The initiative has a network of more than 150 partners supporting the goal of training 100,000 excellent STEM teachers in 10 years.
EnCorps STEM Teachers Program	The EnCorps STEM Teachers Program recruits, trains, and supports diverse and committed STEM professionals to volunteer and teach in low income and under-resourced communities. More than 44% of EnCorps Fellows identify as teachers of color, and the program reports an 88% 5-year teacher retention rate. The program places Fellows in California, Colorado, and New York.
Next Generation Black STEM Teacher Network	The Next Generation Black STEM Teacher Network, based at Winston-Salem State University, is a multi-institutional consortium to increase the number of highly trained and certified Black STEM teachers for rural and urban school districts.

Additional Resources

Teacher recruitment and retention is a challenge across teacher subgroups. These resources offer a more general overview of strategies to combat the teacher shortage.

American Institutes for Research (AIR) STEM resources: https://www.air.org/our-work/education/stem

American Physical Society. (2021). *Building America's STEM workforce: Eliminating barriers and unlocking advantages.* https://www.aps.org/policy/analysis/upload/Building-America-STEM-workforce.pdf

Bieda, K., Kim, J., & Youngs, P. (2019). *Teacher induction programs that lead to retention in the STEM teaching workforce* (ARISE Commissioned Paper Series). American Association for the Advancement of Science. https://aaas-arise.org/wp-content/uploads/2020/01/Youngs-Bieda-Kim-Teacher-Induction-Programs-that-Lead-to-Retention-in-the-STEM-Teaching-Workforce.pdf

Center on Great Teachers and Leaders at AIR: https://gtlcenter.org/

Duncan, E. (2022). *Addressing teacher shortages in the short and long term: What states and districts can do.* Education Trust. https://edtrust.org/wp-content/uploads/2014/09/Addressing-Teacher-Shortages-in-the-Short-and-Long-Term-May-2022.pdf

Konoske-Graf, A., Partelow, L., & Benner, M. (2016). *To attract great teachers, school districts must improve their human capital systems.* Center for American Progress. https://americanprogress.org/wp-content/uploads/2016/12/HumanCapitalSurvey-report.pdf

Podolsky, A., Kini, T., Bishop, J., & Darling-Hammond, L. (2016). *Solving the teacher shortage: How to attract and retain excellent educators.* Learning Policy Institute. https://learningpolicyinstitute.org/sites/default/files/product-files/Solving_Teacher_Shortage_Attract_Retain_Educators_REPORT.pdf

U.S. Department of Education, Office of Special Education Programs (OSEP). (n.d.). Ideas that work: Attract, prepare, retain resource database. https://osepideasthatwork.org/federal-resources-stakeholders/topical-issues/attract-prepare-retain-resource-database

U.S. Department of Education STEM resources: https://www.ed.gov/stem

Other Briefs

This section includes links to other briefs in the series.

Bilingual Teachers

New Teachers

Rural Teachers

Special Education Teachers

Teachers in Low-income and Low-performing Schools

Teachers of Color

Endnotes

[1] Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2016). *A coming crisis in teaching? Teacher supply, demand, and shortages in the U.S.* Learning Policy Institute.

[2] Podolsky, A., Kini, T., Bishop, J., & Darling-Hammond, L. (2016). *Solving the teacher shortage: How to attract and retain excellent educators.* Learning Policy Institute.

[3] Carver-Thomas, E., & Darling-Hammond, L. (2017). *Teacher turnover: Why it matters and what we can do about it.* Learning Policy Institute.

[4] Steiner, E., & Woo, A. (2021). *Job-related stress threatens the teacher supply: Key findings from the 2021 State of the U.S. Teacher Survey.* RAND.

[5] Marder, M., Brown, R. & Plisch, M. (2017). *Recruiting teachers in high needs stem fields.* American Physical Society.