

Science Test Scores Increase When New Teachers Receive Support

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With a nationwide shortage of science teachers and plummeting student test scores, many school districts are forced to hire teachers with science degrees but little training in education or experience teaching. Without effective support, research shows that 66 percent of new teachers will quit the profession within three years. What can school leaders do to support new science teachers?

Researchers at George Mason University's Center for Restructuring Education in Science and Technology (CREST), with funding from the National Science Foundation (NSF), created the New Science Teachers' Support Network (NSTSN). The NSTSN provides an integrated support system for first and second year science teachers in secondary schools and conducts research to determine what makes the most significant difference in teaching. Working with middle and high school science teachers, the NSTSN chronicled the experiences of uncertified teachers in three Virginia school districts and the people supporting them to determine how the new teachers' needs were addressed and the consequences of those actions.

The research from the NSTSN revealed that

- students enrolled in the classes of teachers who received support performed significantly better on the Virginia Science Standards of Learning tests

than students enrolled in the classes of a comparable set of new science teachers who did not receive support ($M_T = 37.50$, $SD_T = 8.26$, $M_C = 35.80$, $SD_C = 8.53$, $t(5837) = 7.61$, $p = .000$).

Research from the NSTSN identified a series of challenges teachers face when new to teaching and how to mitigate them. Effective school leaders create school environments that nurture new teachers to succeed at teaching and reach their potential. The research provides a series of recommendations for school leaders to support new science teachers by establishing working conditions to enable new teachers to succeed. Through improved working conditions, new science teachers are provided the time they need to learn how to teach well.

The NSTSN research identified the most vital forms of support for new science teachers which are:

- in-classroom support and
- quality courses in how to teach science.

Retired master science teachers are one group not to overlook as a source of support because many have the skills, knowledge, and time to work with new teachers. Not only can retirees observe classroom teaching and provide support throughout the school day, but they can identify when a teacher is being treated poorly and serve as an advocate. Free of the constraints of teaching their own students, retired science teachers have both the time and the knowledge to make a difference.

Courses in how to teach science help new teachers plan lessons, identify effective teaching strategies, organize laboratory activities, identify common misconception of students, assess learning, and adapt lessons to the special needs of learners including English language learners. By enlisting the help of retired science teachers and providing courses in science teaching, new science teachers were able to perfect their teaching and enhance student learning.

Teachers have a daunting task. They must be instructional leaders, curriculum and assessment experts, special needs advisors, cheerleaders, educational visionaries and change agents. Growing expectations for teachers to successfully teach a broad range of students with different needs and steadily improving achievement mean that classrooms and teaching typically must be redesigned rather than merely continuing as in the past.