

# Researchers identify best strategies for supporting new science teachers

September 9 2008

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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 proper support, research shows that 66 percent of new teachers will quit the profession within three years. Now, new research from George Mason University's New Science Teachers' Support Network (NSTSN) has identified the most vital forms of support for new science teachers—providing them with in-classroom support and quality courses in how to teach science.

The NSTSN, created by researchers at George Mason University's Center for Restructuring Education in Science and Technology (CREST) with funding from the National Science Foundation, 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.

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

Working with middle and high school science teachers, the NSTSN

research revealed that students enrolled in the classes of teachers who received the support of in-class mentors who were retired science teachers and a science teaching course performed significantly better on standardized tests and had better science grades than students enrolled in the classes of a comparable set of new science teachers who did not receive the in-class support from retirees or a science methods course. Also, by enlisting the help of retired science teachers, new science teachers were able to perfect their teaching and enhance student learning.

"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," says Wendy Frazier, associate director of CREST and program manager on the NSF grant. "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. Retirees are able to help new teachers plan effective lessons, identify strategies and organizational ideas for laboratory activities and model effective teaching techniques during a lesson.

Studies have shown that teacher attrition can be reduced through attention to improving new science teachers' working conditions. Through improved working conditions, new science teachers are provided the time they need to learn how to teach well.

In addition, the NSTSN makes the following recommendations.

-- Assign new teachers only one class preparation so they have time to reflect and revise lessons between class periods to perfect their teaching

skills.

- Provide new science teachers their own classroom instead of having them float between classrooms with a cart.
- Establish a plan and identify a person or team to provide new teachers with an orientation to the school, policies and procedures.
- Provide teaching resources, including teaching supplies, computer equipment and science equipment, along with a trainer to demonstrate effective equipment use.

"As school districts continue to hire uncertified science teachers, clearly there is a need for a more thorough understanding of how effective support programs targeting this special population of teachers function, so that replication is possible," says Frazier.

Source: George Mason University

Citation: Researchers identify best strategies for supporting new science teachers (2008, September 9) retrieved 26 April 2024 from <https://phys.org/news/2008-09-strategies-science-teachers.html>

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