

MSU aims to give young students head start with science education research

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MSU is leading a research effort aimed at making educators more comfortable teaching science to 3- to 5-year-olds. If successful, the methods could be implemented in preschools throughout the country.

EAST LANSING -- Emphasizing greater participation in science among low-income children, Michigan State University leads a team of researchers testing an innovative teaching program that could ultimately be used in the nation's preschools. The five-year effort, called Head Start on Science, is funded by a \$2.6 million grant from the National Science Foundation. It's designed to get educators more comfortable teaching science to 3- to 5-year-olds -- a task that's especially important for low-income and minority children who often start school with less preparation for science learning than affluent students, according to lead researcher Laurie Van Egeren.

"There has been a movement to have more science and math preparation for kids before they enter elementary school, but most preschool teachers do not feel comfortable teaching science," said Van Egeren, director of the Community Evaluation and Research Collaborative in MSU's Office of University Outreach and Engagement.

The study will be implemented in 72 Head Start classrooms -- which serve low-income children -- in Detroit and the following counties: Macomb, Oakland, Livingston, Jackson, Berrien, Van Buren, Cass and Calhoun. The Inter-Tribal Council of Michigan Head Start will also be a venue for the study.

While all teachers will receive the same curriculum materials, half of them also will be coached on how to offer dynamic lessons that get the kids talking and asking questions about science. For example, in a pilot study, live snails were used to foster student discussion on issues such as the creature's diet and habitat. The other half of the teachers will serve as a control group to gauge the impact of the coaching. Teachers will be supplied digital video recorders and will capture their own lessons. The coaches will then review the lessons from their respective locations and offer feedback. This process, called distance coaching, is highly effective and saves time and money by reducing travel, Van Egeren said.

In the pilot study, researchers saw a substantial increase in the Head Start teachers' confidence in teaching science and also in their attitudes about science in general, Van Egeren said. Teachers also will work with parents to encourage their preschoolers to explore and ask questions about everyday experiences, setting the groundwork for future scientific learning. Studies show that parental support in science is linked to student success, especially for minority students. Ultimately, coaching the teachers could lead to improved student performance.

Student outcomes related to scientific thinking, language and math will be assessed before and after the program. Based on the findings, the program could potentially be used on a broader scale -- in both Head Start and other preschools, Van Egeren said. That's the main mission of Outreach and Engagement -- to translate research into practice in an effort to solve real-world problems. "We focus on collaborative and participatory efforts with our community partners, and that means working together to come up with solutions that advance the teachers' capacity to teach science, the parents' capacity to back that up at home and the preschoolers' capacity to learn," Van Egeren said.

The research team includes MSU scholars Norm Lownds, Department of Horticulture; Hope Gerde and Holly Brophy-Herb, Department of Human Development and Family Studies; Steven Pierce, Center for Statistical Training and Consulting; and Christina Schwarz, Department of Teacher Education.

Also participating are Brad Morris, faculty member at Grand Valley State University, and the staff at Lansing-based Capital Area Community Services Head Start. Work begins in November.