IOWA STATE UNIVERSITY
College of Human Sciences

Another Advancement In

STEM Education

*Iowa State University informing decision-makers about research in **S**cience–**T**echnology–**E**ngineering–**M**athematics **Education***

"Teacher education matters."

The wonders of science start at an early age and continue throughout our lives. From digging in the dirt as a youngster to applying fertilizer on the lawn, the lessons taught in school can provide a basis for a lifetime of curiosity and good decision-making.

Joanne Olson, associate professor of science education at Iowa State University, understands the importance of science in the classroom and sees a need for new teachers to become better prepared to teach science. Olson's research tracks students in elementary teacher education programs and their experiences in the classroom five years later. The research project uses interviews, classroom observations, and a variety of assessments to get a better understanding of how new teachers learn about elementary science education and how they teach it to their students.

"When we look in classrooms, we see that one-third of elementary teachers don't teach science at all," Olson said. "Another one-third is not comfortable teaching it, and the other third is a mixture of good instruction and those teachers using 'cookbook' science – where students may follow directions and have a good time, but they don't learn any science concepts. We need to understand what is impacting how science is taught. This has implications for what we do in teacher preparation."

Olson said teachers need a strong understanding of how to teach science, a difficult subject that often involves untangling students' misconceptions rather than introducing completely unfamiliar topics. A strong science education is becoming even more important as children are spending less time outdoors than ever before.

Olson (left), engages young minds in the concepts of nature and science.

Olson expects her research, now in its ninth year, to continue for at least five more years. Thus far, there has been growing interest from other science education experts who recognize that improving science in the classroom will take more than workshops and changes in the curriculum.

"Trying to help people understand how to teach science is a very complex process," Olson said. "Institutional constraints and competing priorities certainly exist, but this research shows that we can make an impact on how elementary teachers address science in the classroom. Teacher education matters. There are structural components that can be built into teacher education programs that will help new teachers go out and see student success in science and mathematics. We want students to leave their K-12 education with a strong appreciation of nature and an understanding of their role in this world."

For more information:

Visit the web site at www.hs.iastate.edu/STEMEd of contact Joanne Olson, associate professor of science education, phone (515) 294-3315, email jkolson@iastate.edu.