

## Grant helps elementary schools boost engineering enthusiasm

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### **Some Iowa schools will incorporate engineering lessons into classrooms to boost creativity, problem-solving skills**

Starting this fall, elementary schools in Ames, Iowa will begin integrating engineering into classrooms to challenge students to think creatively and problem solve, with hopes of encouraging more students, especially those of underrepresented groups, to envision themselves as the engineers of the future.

"This is about talking with kids that anyone can be an engineer, and an engineer is like an inventor that has a problem to solve," said Kari Smith, an Ames math and science teacher on special assignment.

For the start of the 2016-17 school year, 11 elementary classroom teachers and two teacher technology librarians across the district's five elementary schools have volunteered to participate in this pilot year of using the program Engineering is Elementary (EiE). The funding for the pilot was awarded to Ames with a grant from the Governor's STEM Advisory Council. If the pilot year is a success, the district hopes to expand the program to all of its elementary classrooms.

Smith said she was first introduced to EiE this past fall and decided to apply for the funding this spring.

"I thought that'd be something that could work for us because our elementary schedule doesn't leave a lot of time for science instruction," she said. "Right now we have 30 minutes a day that's shared for science and social studies."

Currently, engineering is not taught in the Ames elementary schools. Smith said while some teachers have dabbled with some lessons incorporating engineering, many teachers have not had the training to feel comfortable teaching the subject.

### **Next page: How engineering is a natural fit for younger students**

"It's just about empowering our teachers and getting them the appropriate training and materials that can support them," Smith said.

One of the technology teacher librarians who has volunteered to test the EiE curriculum this coming year is Teresa Green at Edwards Elementary, who said she has previously used some

engineering in her lessons with robotics.

"Kids have a problem and have to use the engineering process to fix the problem," she said.

"They start to tap into their creative energy in many ways."

With the integration of the 1-to-1 laptop and tablet initiative being implemented into the Ames elementaries this fall, Green said Edwards' computer lab is being converted into a makerspace, a place where students will have resources, such as 3D printers, to create, invent and learn.

"Engineering is such a huge component of what we do in a makerspace," Green said.

"Engineering applies to so many different fields."

Smith said while some of the grant options available by the Governor's STEM Advisory Council included after school programming that included engineering, she selected EiE because the instruction would be accessible to all students.

"They really want to target females, they want to target minorities students," she said. "They just want to get the science instruction and engineering practices in the hands of kids who might not otherwise get it. So by us doing it in the classroom during school time, all of our students have access to it. It's not just those kids that can stay after school."

By piloting EiE, Ames is also getting a start on implementing the state's new science standards adopted this past fall and that have to be fully implemented by the 2018-19 school year. As part of these new standards, engineering is now required for K-12.

"The biggest aspect of the new science standards is the engineering," Smith said. "That's the most different for teachers."

The 13 teachers participating the pilot will attend a day of professional development this August to prepare for the roll out of the engineering curriculum.

Smith said in testing out some of the engineering lessons, they range from learning about circuits to levers and pulleys and about how flowers are pollinated.

"There is always this problem to solve that takes them through the engineering process," she said.

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