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i-STEM INSTITUTES TRAIN TEACHERS FOR STATE'S RENOWNED STEM EDUCATION EFFORTS

(BOISE) -- The Idaho State Department of Education's STEM coordinators have a simple vision, if somewhat ambitious -- to have the Idaho K-12 education system set the national standard of excellence in Science, Technology, Engineering and Math (STEM) instruction.

Working in cooperation with partners across the state, including business and industry, "we have, in essence, accomplished that, based on the recognition we've received" for the quality and cost effectiveness of the Idaho STEM (i-STEM) programs, said Scott Smith, the SDE's coordinator for STEM education.

The most important part of the i-STEM education effort is providing teachers with the training and tools they need to assimilate STEM instruction into their classrooms, regardless of the subject they teach.

To help do that, six regional professional development i-STEM Summer Institutes for teachers will be held in June and July across Idaho. It's a highly popular program that usually "sells out" faster than a rock star concert as soon as registrations open, and there's a lengthy waiting list each year for teachers who didn't sign up fast enough.

Teachers attending the institutes receive ideas for STEM education, tools, a technology device, resources, curriculum and materials kits for their students. "They get everything they need to go back and run a STEM program in their classroom," Smith said. "It's why it's so popular," with over 1,000 applications for the combined 600 seats available at the institutes, he said. And it's why the SDE and the i-STEM program team reach out in particular to small rural schools, which often can't afford expensive programs or specialized instructors. "We brought in teachers from small districts and asked them what they needed," Smith said. Then the i-STEM team built a program to meet their needs.

When participants leave an i-STEM Summer Institute, they go forward to form teams in their schools that incorporate learning through the lens of STEM in a wide variety of academic disciplines, not just the science and math classrooms.

Now in its sixth year, the i-STEM Summer Institutes program has grown from two sites to six scattered throughout Idaho for ease of access by educators. This year's institutes will be held at:

- Lewis & Clark State College, Lewiston June 15-18
- North Idaho College, Coeur d'Alene June 15-18
- Eastern Idaho Technical College, Idaho Falls June 16-19
- Idaho State University, Pocatello June 22-25
- College of Southern Idaho, Twin Falls June 22-25

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- College of Western Idaho, Caldwell June 23-26

Key members of the i-Stem Summer Institutes team are Anne Seifert, from the Idaho National Laboratory, Dr. William Parrett from Boise State university and Dr. Louis Nadelson from Utah State University, who manage the registration, development, research and evaluation for the institutes and guide the curriculum. There is a small fee to attend and teachers, who wind up with their own institute homework assignments, receive continuing education credits for successful completion of the program.

STEM education is a process, Smith said. Far more than just facts and formulas, it's an effort to get students involved in learning about how things work in the real world by using techniques to discover on their own how to experiment, create and innovate. It is designed to turn students into self-reliant problem solvers. "The techniques they use and the knowledge they gain today can make a better tomorrow for everyone. They learn to lead the way to innovation," he added.

The classroom curriculum focuses on inquiry-based problem solving and hands-on project-based learning that provides students with an understanding and practical experience of the impact STEM has on the real world they will enter after graduation. The programs also try to incorporate topics of interest that highlight or utilize Idaho's STEM-based business and industry, and demonstrate the opportunities available in the state for students who pursue STEM careers. "We have a lot of businesses in this state that need people with STEM skills," Smith pointed out.

STEM education, from kindergarten through college (K-20), is a high priority for Idaho, not just among educators, but also with the state's businesses and industry. For students to compete in the 21st century, they must become STEM literate, Smith noted, and for America to compete on the world stage a much larger number of students than do so currently must pursue STEM careers.

Nationally and in Idaho, much of the focus of STEM education is designed to restore America's preeminence in science and technology, which many critics believe the country is losing. Nine out of ten scientists and engineers in the world currently live in Asia and more than half of all the engineering degrees awarded by American colleges and universities go to foreign nationals. Meanwhile, recent studies show that fewer than 15 percent of high school graduates have an adequate skill base in science and math to pursue scientific and technical degrees. In addition, 60 percent of all new jobs expected to be created this century will require STEM skills currently possessed by only 20 percent of the U.S. workforce.

The 2015 i-STEM Summer Institutes are supported in part by an Idaho State Department of Education Math Science Partnership grant and matching support from a variety of i-STEM partners in business and industry, community-based organizations, state agencies and higher education. A key partner from the very beginning has been the INL and its general contractor, Battelle Energy Alliance.

They, along with major industry leaders such as Micron, H-P, Idaho Power and Simplot, as well as many other businesses that rely on employees with STEM skills, "all want to have Idaho natives in their workforce," Smith said. "We need kids to understand that they can get really good science and engineering education at Idaho universities, and then find a job in state. We need to excite students about STEM careers and we need to make STEM learning fun," Smith said.

To help achieve that goal, besides the summer institutes for teachers, the department helped create the "Idaho STEM Pipeline"(http://www.idahostem.org/) to serve as a user-friendly web portal that provides information on various Idaho programs available to students, parents, teachers and Idaho communities.

The K-12 professional development i-Stem Institutes hosted by the State Department of Education are just one prong of a multi-faceted statewide strategic plan for STEM education in

Idaho that was adopted by the State Board of Education. As part of that plan, on June 9, the University of Idaho-Micron 2015 Idaho STEM Innovations Conference will be held at the Riverside Hotel in Boise from 7:30 a.m. to 8 p.m., and the following day, June 10, the State Board of Education will hold a free STEM Summit, open to anyone interested in STEM programs, from 7:30 a.m. to 5 p.m. in the Student Union Building at Boise State University.

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