Program creates more STEM teachers

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Goggles press into her face with her hands hidden beneath gloves, pouring hydrogen peroxide into a beaker for the first time. A smile sweeps across her face as the colorful, foaming liquid pours out; her teacher smiles in unison.

Oklahoma State University announced last week the National Math and Science Initiative a gave the school a $1.45 million grant to implement UTeach, a program dedicated to producing quality teachers in science, technology, engineering and math (STEM) related fields.

Established in 1997 at The University of Texas at Austin, UTeach was a response to growing concerns about the quality of STEM education in the K-12 school systems, according to the UTeach Institute's website.

OSUTeach is the first UTeach program to be implemented in Oklahoma and will give students the chance to shine as educators of STEM disciplines and represent the future of STEM careers.

Kristen Baum, co-director for OSUTeach, said she has been interested in STEM education for many years and is excited about the efforts between colleges.

"It's very exciting to see everyone working toward a common goal," she said.

Baum said OSUTeach is an innovative approach to training future teachers that gives students both opportunities and flexibility with their careers.

"So, it gives students the pedagogy they need such as learning how to teach and what approaches work well in the classroom," Baum said. "With their degree, they will earn a teacher certification all within their four years."

Regardless of the grant, a similar program would be developed, said Pamela 'Sissi' Carroll, dean of the College of Education.

"It's interesting because we think this is the right thing to do regardless," said Bret Danilowicz, dean of the College of Arts and Sciences. "When we learned we were going to be receiving the funding, it sped us up because we could begin enrolling students in the program this fall."

Department heads and other faculty members are developing new classes that will be available in the fall, Baum said, such as the first course of the program titled Step One.

"It's a one credit class that gives students the opportunity to try out teaching," Baum said. "They can really get a feel if this is something they are interested in doing."

Baum said students will have a good balance between their chosen STEM field of study and teaching.

"We already have a strong education program for training teachers, but this will enhance it even more and provide a unique set of experiences," Baum said. "Having that balance between excellent training on the teaching side of things as well as in science and math gives a strong background across the board."

Danilowicz said teachers will traditionally get an undergraduate degree in a science or math field and then master in education, taking the student five to six years to complete school.

OSUTeach allows students to graduate with a STEM degree and a teaching certification within a regular four-year plan with around 120 hours.

"There are certainly different routes you can go, but there's never been one that's streamlined for our science and math degrees," Baum said. "It will open up opportunities for students to be able to accomplish their goals and then have the flexibility of teaching as soon as they get out and being prepared to do so."

Schools across Oklahoma have brought in people from other disciplines to teach courses they aren't necessarily certified in. Carroll said the crisis Oklahoma is facing is the lack of teachers in STEM field.

"Our goal is that by having really bright people who are very interested in math and sciences think about teaching as a career, we will fill classrooms with great teachers and they in turn will inspire adolescences to see science and math as lively and fascinating subjects," Carroll said.

"The state is unable to hire enough science and math teachers," Danilowicz said. "Which means other teachers teach subjects they aren't necessarily right for."

"They have to bring in people from other disciplines who might be trying their best, but they weren't trained in science to engage the mind, engage the hands and I would say, engage their dreams," Danilowicz said.

It's the teachers who inspire, Danilowicz said, that will keep students interested in science and math and encourage them to take more challenging courses.

"When I think about my history and when I was in school, I had some teachers who I learned a lot from and they were very engaging, hands on, involving me directly as an individual in the lab," Danilowicz said. "I also had some teachers who really just talked to me about science from a book, which wasn't exciting at all."

The UTeach program will have expanded to 45 universities this fall and is expected to create more than 9,000 new math and science teachers in the United States by 2020, according to a recent news release.

"Right now, as a university, we graduate about 10 to 12 science and math teachers a year," Danilowicz said. "I expect in four to five years, that we will be at least quadrupling science and mathematics teachers that we graduate."

Not only will students be interested and excited about working in STEM disciplines, they will be inspiring the up-and-coming classes of college students for the future.

"We will have more students in middle and high school who are learning more about math and science and who are more enthusiastic about continuing to learn because they'll have teachers who are better prepared to teach," Carroll said.

Danilowicz agreed and said he is hopeful for the new generation of teacher and student relationships being created by OSU graduates.

"It won't take long for people to start noticing the quality of teachers we're producing," Danilowicz said. "When you have graduates who just exude quality and confidence, that actually elevates the whole university."

The grant, made possible by the Howard Hughes Medical Institute, covers about half the costs for five years. Danilowicz said the other half is covered by OSU and other philanthropic supporters.

"The grant helps us establish a new program and get our feet solidly under us," Carroll said. "We plan to seek more support from foundations and individual donors that will help us continue to offer the program."

"We are confident that this is going to make such a change for our teachers and the number of teachers we are preparing; that there will be a lot of interest from our alums and also the industry and school systems who really need our teachers to be teaching the STEM fields in an engaging way with students," Dean said. "We believe there will be enough support that we will be able to continue this."

In early March, an event will be held to celebrate the new OSUTeach program. Visit osuteach.okstate.edu to request more information about the program or to donate.

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>
> **BRET DANILOWICZ**, College of Arts and Sciences dean

UTeach Program

What:
Program to create more teachers in science, tech, math and engineering

Financed by:
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