Astronomy prof honored for his creative teaching

Will Ferguson Arizona Daily Star Arizona Daily Star | Posted: Saturday, February 18, 2012 12:00 am

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Don McCarthy

Educators and telescopes share a trait - they can open the minds of young people to strange new worlds.

Don McCarthy said he has tried to do just that for the 1,500 students who have attended the University of Arizona's astronomy camp since he took over the program in 1989.

A professor of astronomy at the UA's Steward Observatory, McCarthy recently received the American Astronomical Society's 2012 Educator of the Year award for his innovative approach of putting young students in the role of researchers.

McCarthy said astronomy has many tentacles and uses science, technology, engineering and math - the four skills that make up STEM, the current educational buzzword.

"The trouble that I am seeing playing out in society is that although STEM is one term, one acronym, people are treating each skill separately from the other," he said.

He said astronomy camp is a place where both students and educators learn to merge these different

skills in a practical way. Campers from 48 states and 20 foreign countries have made the trek to Tucson to spend sleepless nights at mountaintop observatories.

McCarthy said UA's astronomy camp is spreading scientific knowledge on a national scale.

The camp is currently working with the Girl Scouts of America as part of a NASA-funded proposal for the Near-Infrared Camera being built at the UA for the James Webb Space Telescope.

A small part of the project's budget is being used to host twice-yearly educational workshops for Girl Scout leaders. McCarthy said they learn about astronomy and how to teach critical thinking skills. More than 200 Scout leaders from across the country have thus far attended a workshop, he said.

Both students and educators get the opportunity to work with professional researchers at observatories in the Santa Catalina Mountains and at the Kitt Peak National Observatory.

Older students pick their own line of research, he said. They use STEM skills to critically reason their way through problems astronomers face daily.

"There is a natural language or discussion that emerges without making it a formal test," he said. "Afterwards you discuss the results with the kids and teenagers in a way that doesn't necessarily involve a calculator."

McCarthy said campers have the opportunity to glimpse the gravitational effects of Jupiter-sized planets orbiting distant suns, variable stars unstably winking on and off, and distant, star-forming galaxies.

Some 60 astronomy camp graduates have enrolled at the UA over the last 25 years.

McCarthy said about 30 of those students received or are pursuing degrees in physics or astronomy.

One of his former students received her doctorate in astronomy last year. She recently made national headlines for a discovery about how sunspots form and why they persist.

"She solved a major mystery there, which is totally cool because I remember her when she was in junior high," McCarthy said.

McCarthy said another former camper recently scheduled his final recital for a doctorate in organ and musical composition. He said the student's compositions were steeped in starlight. "You go to his recital, he will first tell you what you are about to hear by saying something about astronomy," McCarthy said.

McCarthy said he uses music in the astronomy camps.

"We play a certain piece, have a little discussion about it, then off we go," he said. "It is an inspirational time."

One of his favorite musical scores is "Music of the Night" from the "Phantom of the Opera." He said the lyrics pose interesting questions for students about to gaze at the stars.

"What lies ahead tonight? The idea that just by looking at the stars you might discover something new," he said.

"Look up because you might be surprised by what you see. Light from a supernova millions of light years away could arrive at any second."

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