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## UT Science program brings hand-on learning to Blount

By Bonny C. Millard  
of The Daily Times Staff

A 20,000-year-old mastodon tooth — weighing several pounds and larger than a hand — gives students at Carpenters Middle School an idea of the size of the extinct animal.

The difference between seeing a drawing of a mastodon on an overhead screen and holding the tooth, discovered in New England, illustrates the advantage of a new science program at the school.

Two University of Tennessee graduate students in the geography department are working with science teachers at the school to provide hands-on activities for the students.

Victoria Headrick, earth sciences teacher for seventh- and eighth-graders, said the graduate students will be at the school twice a week for 10 hours through May.

The program, GK-12, was made available through a \$1.97 million grant that UT was awarded by the National Science Foundation, NSF. GK-12 is a nationwide effort by the foundation.

Betsy Tillet, who teaches sixth-grade general science, said both the NSF and UT want to help improve science education in rural middle schools. UT chose 10 teachers in East Tennessee including Tillet, Headrick and two at Heritage Middle School.

### History in tree rings

In a recent class discussion, graduate student Saskia van de Gevil-Edidin showed students several different cross-section slices of trees.

Van de Gevil-Edidin, who is studying tree rings and the environment at the tree line in Montana, pointed to one area in the trees rings and explained that a beetle had killed the tree. A fire scar also indicated the tree had survived a forest fire, and the rings allow researchers to determine when it occurred, she said.

In Montana, where van de Gevil-Edidin helped collect samples, the tree line is at 8,000 feet, compared to the Smoky Mountains where the highest evaluation is 7,000 feet, she explained to the students.

The other graduate student, Angela Danovi, is researching water quality issues. She demonstrated testing water samples for pollutants such as fertilizer that commonly end up in water sources.

Tillet said reading a textbook about these and other science facts are not that exciting to middle schoolers. This program also gives them a chance to see that people actually do this for a living.

Headrick agreed about the value of the hands-on experience. A unit on fossils was a good opportunity for the UT students to bring in petrified remains for the students to

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see and touch.

Headrick said this gives students the chance to hold a million-year-old fossil.

The UT students are following the curriculums used by Headrick and Tillet while sharing their expertise and materials. It's bridging the gap between a concept and real life, Headrick said.

UT, through its graduate students, can provide a lot of materials for the classes over the next school year, Tillet said.

"They have so many resources they're willing to let us borrow," she said.

Tillet surveyed the science lab and pointed out the classes have a limited amount of equipment to use. Funding is tight, so this gives the teachers another alternative.

The program not only provides science education for the students, but also gets them excited about learning it, Tillet said, adding it will help her and Headrick improve their curriculums.

"The kids are so engaged," said Tillet.

Both middle school teachers have attended several 10-day workshops at UT over the last few summers to enhance their own science knowledge and improving their teaching strategies.

"They (UT) chose us from the workshops we've attended in the summer," Tillet said.

**Reaching out**

Both Danovi and van de Gevil-Edidin plan to become college professors once they complete their degrees.

"I think outreach is really important," said van de Gevil-Edidin, who's working on her doctorate. "I hope they'll always stay curious about the environment."

Danovi said she wants to provide more awareness to the students about how they contribute to the environment — either negatively or positively.

She gives students the example of where their gum wrappers end up. After being thrown down on the ground, the wrappers are carried from drainage systems into a river and that connects to drinking water sources, said Danovi, who is working on her masters in the department of geography.

Another advantage of having the UT students in the classroom is that it gets middle school students to start thinking about college, Tillet said.

NSF pushes to keep both female and male students interested in science, van de Gevil-Edidin said.

Headrick and Tillet formed a Science Club last year and have about 30 students participating this year. Those students have committed to entering the Science Fair. The teachers will mentor the students through the process and also take them on field trips.

The club will provide students an opportunity to do "fun stuff of science" that classroom time doesn't always allow, Headrick said.

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