Federal Grant Funds UA Educational Software Expansion
By La Monica Everett-Haynes, University Communications, April 24, 2012

UA professor Carole R. Beal and her collaborators have earned a $1.2 million federal grant to make AnimalWatch, the web-based tutoring program for algebra readiness, accessible for visually impaired students.

Students can find all sorts of tutoring support, sheet music, math problems, scientific diagrams, digital literature libraries, writing prompts and a host of other educational resources on the Internet, and in increasing numbers. But such resources are not always accessible to students with limited or no vision, said University of Arizona professor Carole R. Beal.

"There is a lot of educational software out there, but for someone with low vision, it doesn't always work very well," Beal said.

Collaborating with Jane Erin and L. Penny Rosenblum of the UA College of Education, Beal is the principal investigator on a new $1.2 million grant from the Institute of Education Sciences, which is part of the U.S. Department of Education.

The funding will enable the team to expand AnimalWatch, an extensive math tutoring system Beal and her collaborators developed years ago, to be more accessible to students with visual impairments. The new three-year grant will allow the team to ensure that AnimalWatch is universally designed so that a student, whether they have visual impairment, have a learning disability or just prefer to learn in different ways, can use AnimalWatch more efficiently.

In effect, the team is working to ensure that AnimalWatch is universally designed so that a student, whether he or she has a visual impairment, a learning disability or just prefers to learn in different ways, can use AnimalWatch more efficiently.

"The program is pretty mature now, but we wanted to figure out how to tackle this issue of accessibility," said Beal, a professor in UA's School of Information, Science, Technology and Arts, or SISTA.

Beal helped develop the web-based AnimalWatch for algebra readiness during the late 1990s, prior to arriving at UA. The tutoring system covers the range, including computation, fractions, and pre algebra topics such as ratios, proportions, decimals, unit conversion, among others.

The project and software, which teaches students about different types of animals and also endangered and invasive species, have also received multiple grants over the years, primarily to expand content and offerings. AnimalWatch is currently being utilized in dozens of California schools, Beal said, with positive results for typical learners.

Under the new grant, the UA team is partnering with New York-based Touch Graphics, which is developing a prototype for textured or raised diagrams that will incorporate color to be accessible to those with limited vision.

"With technology changing so rapidly, we had to examine what was out there," said Rosenblum, who also is serving as the project director.

The team also plans to enable other functions allowing students to control a number of features, including text size, color, video, audio and other adjustments designed to help them to interact more easily with the tutoring system. Students also would have more flexibility to repeat and skip over information.

Rosenblum and Beal said these are important features, as students and teachers may have limited classroom time to interact, or to focus on individualized instruction.

"We don't have as many opportunities to help them, so we want to make sure that, for the students, it is efficient," Beal said.

The universal design is especially important to note, Rosenblum said.

"Our target is for students with low vision or blindness, but this is helpful for all students," she said. "Students will be able to tailor the program to their particular needs. We really want this to be user-driven."

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The new grant will result in the AnimalWatch VI Suite. The original version is currently being utilized in dozens of California schools, Beal said.

Local project partners include the Arizona State Schools for the Deaf and Blind and the Tucson Unified School District. The team also will work with the Perkins School for the Blind in Massachusetts.

In the first year of funding, the UA team intends to reach 30 or 40 students, most of them in the Tucson and Phoenix region. In subsequent years, the team will expand the program to other states and, by the final year of funding, expects to reach 150 students in states that include New Mexico, Nevada and Massachusetts.

Beal and Rosenblum already tested the prototype in Arizona. Tucson high school student Haylee Holland was among the student population involved in the initial study.

"I think it is a really good idea and that it is cool that people are thinking of new ideas and new software for people with visual impairments," said Holland, a high school sophomore who is legally blind.

Holland said she has tried one other Web-based tutoring program, but found that the AnimalWatch prototype was much more useful. "I think it helps for a broader audience of students using it; it's more useful for a broader audience."
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