

# RESEARCH BRIEFS

## Physics Reform

Dr. Scott Bonham of the Department of Physics and Astronomy was funded for \$144,063 to complete a physics reform project to change classroom techniques to improve web-based homework. The project is entitled "Curriculum Reform Incorporating Drawings and Graphs," and Dr. Bonham will create a set of flexible, modular Java applets for drawing simple graphs and diagrams. These self-graded applets will enable him to use new classes of exercises. Applets are small programs that run inside a web browser, usually written in the Java programming language.

The project will be completed under Dr. Bonham's direction with undergraduate students. Three undergraduates are working with Dr. Bonham on this project, and one of them gave a presentation relating to the programs at a national meeting this summer.

The new exercises created by Dr. Bonham and his students will use the applets to accompany standard intro-



Scott Bonham

PHOTO BY SHERYL HAGAN-BOOTH

ductory physics curriculum with a widely used web homework system and HTML pages. The team will also investigate usage patterns, sources of difficulties, and effectiveness with assessment. He will disseminate progress via the Internet, web-based homework systems, conference presentations, and workshops.

One of the most positive outcomes of this project will be its transference to other academic disciplines such as mathematics, chemistry, engineering, and any courses where graphs, vectors, tables, and equations are used. Instructors who teach in traditional lecture formats may be able to incorporate more research-based methods and activities in their classrooms.

For further information about this project please take

a look at the Physics Applets for Drawing Web site, <http://physics.wku.edu/PAD>, where there are a number of examples of the applets and screens of several presentations about them. These applets currently are being used to enhance Bonham's course, College Physics I.

## Water Quality

Over the past five years the Technical Assistance Center for Water Quality, one of WKU's applied research centers, has provided assistance to small water agencies in the region to improve water quality. The project is funded for nearly \$500,000 per year under the Safe Drinking Water Act of 1996 and the Environmental Protection Agency.

Through the cooperation of Technical Assistance Centers (TACs),

Dr. Andrew Ernest, Associate Dean of the Ogden College of Science and Engineering, heads the project. A team of WKU scientists, state agencies, and community experts assists him. This team works to provide capacity development for public small water systems. WKU's TAC provides technical assistance, managerial and financial training, and a source water protection program. The TAC integrates these tasks by providing information technology and education assistance.



Andrew Ernest



The major outcome is the protection of public health at a savings to our communities.

The WKU TAC will continue to offer small drinking water systems help in developing technical capacities, reducing source water contaminant risks, and providing free managerial training to system managers. Moreover, the team will disseminate results at the national level by presenting information at forums specific to small water systems and their needs. Thus far, the project has shown results through the increased technical expertise of small water system managers, advancing source water protections, and building partnerships. The results are transferable to other systems throughout the nation through the seven other TACs in the United States. This effort has enabled the WKU TAC to develop a source water protection clearinghouse for educational materials and technical assistance to serve local, regional, and national levels.

## Reading First

Dr. Sherry Powers, Interim Head of the Department of Special Instructional Programs in the College of Education and Behavioral Sciences, has been awarded a grant of \$112,137 by the Kentucky Department of Education to support a Reading First Coach. Under Dr. Powers' supervision, the coach will provide consultative services, professional development, and technical assistance to school districts. The project will also strengthen and enhance pre-service courses for students preparing to teach kindergarten through third grade.

Dr. Powers will relate closely to the coach by observing the coach's activities in graduate classes, during consultation with reading professors, and while attending department meetings focused on reading curriculum.

The reading coach will have opportunities to improve skills in the five essential components of reading: phonemic awareness, phonics, vocabulary, fluency, and comprehension. The coach will work with diverse learners to apply current theory and best practices, and also to assess instruction.

The coach will be the liaison among the Kentucky Department of Education, public universities, local school districts, and other partner agencies. In this role the coach will supervise the implementation of reading programs and assess student progress. The coach will be able to assist schools in providing intensive assistance to targeted students. The coach will bring scientifically based reading research programs and professional development activities to the participating schools.

This activity will enable the gathering of data and the subsequent preparation and delivery of reports to the Kentucky Department of Education that will result in stronger reading programs.

This action research project will improve early reading achievement



Sherry Powers

and the confidence of beginning students experiencing reading problems. As a result of discovering reading problems in the early grades, student learning will improve, and the public school experience will be rewarding to many more students than before the project began.

## Rural Health

Staci Simpson, Director of the Institute for Rural Health Development and Research in the College of Health and Human Services, has been awarded a \$385,000 grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration to improve rural health care. The project will continue to improve existing health care services to rural Kentuckians in the Barren River District. Via a mobile unit, students from the College of Health and Human Services provide preventive health and dental services. Collaborative partners include the Barren River District Health Department, Bowling Green-Warren County Primary Care Center, Commonwealth Health Corporation, and Southcentral Area Health Education Center.

The primary focus of the project is to provide screening services such as cholesterol, blood pressure, diabetes, oral cancer and dental screenings, as well as health promotion and health education activities that focus on changing behaviors regarding tobacco use, alcohol and drug use, weight control, and fitness. In addition, a school-based dental sealant program enables second and seventh graders in public schools, within six Barren River Area District counties, to receive dental screenings and sealants. Working closely with faculty and department heads, Beth Whitfield, the Mobile Health Unit Coordinator oversees daily scheduling and outings. Since November 2001, the mobile unit has made 197 outings and served over 7,000 patients.

Special efforts are being made to reach uninsured,

underserved people at no charge to them. A project enhancement is the Hazardous Emergency Awareness Training (HEAT) unit capable of providing both emergency response and community awareness training in rural areas, as well as mandated industrial worker health and safety training. Under the direction of Dr. Rod Handy, this very timely initiative has measurable, cost-effective outcomes, and will strengthen public health.

This project shows WKU's close connections to the community with the affirmation that a healthier community strengthens lifelong learning and a positive environment for residents of the region.



Staci Simpson

