

RESEARCH BRIEFS

Archaeology for the Public Good

Dr. Darlene Applegate of the Anthropology Program in the Department of Modern Languages and Intercultural Studies works on numerous grants from federal agencies and private sources to perform real-time projects in archaeology. Through grants from federal agencies such as the National Park Service and Mammoth Cave National Park, and from private sources such as telecommunication and engineering firms, Dr. Applegate conducts culture resource assessments when construction projects might threaten archaeological sites and artifacts. Using surface survey and subsurface shovel testing, she searches for artifacts and features that indicate past human occupations. Her final assessment reports are critical to the completion of culturally sensitive projects because she identifies and evaluates potential impacts to archaeological resources. The work also contributes to our understanding of archaeological site distribution patterns.

Dr. Applegate is working on a project with Mammoth Cave National Park to monitor archaeological sites in the Park. This project to "Establish an Archaeological Site Stewardship Program" enables Dr. Applegate and her students to work closely with Park staff to prioritize sites and assess their condition. The goal is to maintain an active presence at archaeological sites that are negatively impacted by recreational, erosional, and illegal looting activities within the protected federal lands. In this and many other similar projects, her work helps to preserve our valued cultural heritage for the good of society.



Dr. Darlene Applegate looks on as a student sifts for artifacts at a mock dig at Mammoth Cave National Park. Public involvement in archeology raises awareness of the need for preservation.

Combating Environmental Pollution

Dr. Kate Webb is directing a number of chemistry research projects. One of her most recent awards is entitled "Occurrence and Distribution of Mercury in Mammoth Cave National Park (MCNP)." The University of Kentucky Research Foundation, the United States Geological Survey, and the Kentucky Water Resources Research Institute have jointly funded this project. This research, which is the first year of a four-year project, is part of a larger program of mercury-related work undertaken by Dr. Webb. This project has a strong public service component as it addresses the grow-

ing problem of the impacts of environmental pollution on National Parks. The fate and transport of mercury, a persistent neurotoxin, in Mammoth Cave National Park's aquifer system, and its potential impacts on associated organisms will be examined. Atmospheric deposition of mercury is the largest single source of mercury at Mammoth Cave. With over twenty power plant applications under consideration in the Commonwealth of Kentucky, it is likely that mercury deposition will increase. Therefore, determining the current mercury levels in MCNP and the factors that affect mercury lev-

els and distribution are important. Contaminant transport in a karst aquifer system, such as in south central Kentucky, can be quite rapid and extensive. Mercury may interact with limestone, thus changing its mobility. Mercury's mobility in surface water and ground water is of great concern due to its toxicity and its ability to biomagnify up the food chain. A number of surface and subsurface organisms are endangered or declining in MCNP. Dr. Webb will also determine the bioaccumulation of mercury in fish and mussels. This work will provide the first measurements of mercury levels in Mammoth Cave and the surrounding watershed.

Leadership in the Workplace

Communication is critical to our everyday life in and out of the workplace. The better we communicate, the better we do at the entry level for jobs, and the better our chances are of rising in our chosen professions. Communication ability is even more important today because many of us will have several different careers during our lifetimes.

Dr. Cecile Garmon has obtained a grant from Tommy Lyons, a Glasgow businessman, to help women address personal and communication issues as they direct businesses and organizations at top leadership positions. Entitled "Women in Entrepreneurship," the project will enable participants to develop communication strategies to handle their multiple



Dr. Cecile Garmon

roles in their leadership and personal lives more effectively and efficiently. The project has three primary

Improving Teacher Quality

Dr. Leroy Metze received an award of \$500,000 from the U. S. Department of Education Fund for the Improvement of Postsecondary Education program to "Energize the Resources of WKU and Partner Schools to Increase the Number and Quality of New Teachers." This grant enables the College of Education and Behavioral Sciences to implement programs and strategies to accelerate the number and quality of new teachers in the use of technology to facilitate student learning. The objectives are to increase the standards and to ensure that all teacher graduates demonstrate field proficiency in using technology for instruction. Second, it will ensure that all of Western's teacher education and arts and sciences faculty use technology effectively in educating pre-service teachers. Third, the project exploits technology for learning, networking and communicating ideas, programs, and products to other educators.

The project is critical to WKU's redesign of its teacher preparation

programs. Only 20% of our teachers feel comfortable using technology and over two million new technology proficient teachers will be needed by 2012. With technology education as the basis, the project will include an array of professional development programs for teachers from a variety of teaching subjects. They will have opportunities to exchange ideas, learn more about technology applications to their fields, and demonstrate technol-



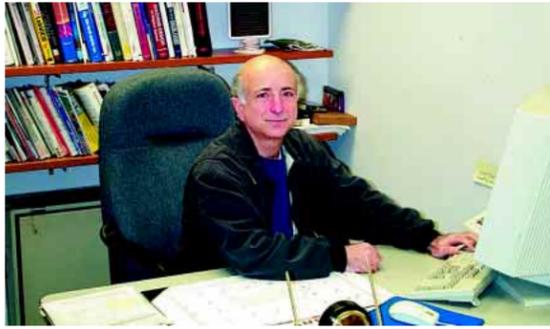
Dr. Leroy Metze

objectives. Dr. Garmon will hold a needs assessment session with participants from Kentucky and Northern Tennessee. This session will identify critical issues to focus upon during the first year of the project. There will be a series of seminars during this academic year led by professionals who have strong experience and expertise in dealing with the issues and concerns of women in these specific roles. The third part of the project will consist of reviewing and evaluating how well the objectives were accomplished and the overall effectiveness of the project.

The project will be supported by organizations sending employees to the activities. It will also hire a graduate assistant to help coordinate the project.

This is a model project that has the potential for replication in Kentucky and around the nation.

ogy rich teaching units that meet National Educational Technology Standards. They will be made aware of mini-grant opportunities to help their schools improve technology in the classrooms. They will learn how to design electronic portfolios for pre-service and K-12 teaching and learning. Finally, Dr. Metze and selected participants will disseminate the outcomes of the project to assist even a wider audience of teachers.



Mr. Kaveh Khatir

Energy to Residential and Commercial Units.” This interdisciplinary project consists of a team of WKU faculty and staff. The team will research the application of passive and active solar energy to residential and commercial industrial units. The team will study current technology to

convert solar energy to water and space heating, and to improve the efficiency of energy conversion by means of design, manufacture, installation, data collection, and performance analysis.

The key objective is to design a

solar energy conversion system that can significantly reduce lighting, heating, and cooling costs for single and multi-family homes. The project will determine the economic feasibility of producing the system for purchase through the Internet, through catalogues, or in local stores.

The award enables Mr. Khatir and his team to purchase equipment for data generation, logging, and analysis.

The team will involve students in applied research by constructing a laboratory for teaching science through designing the lighting, heating and cooling system.

A further benefit of the project will include addressing reduction of dependency on fossil fuels which are sensitive to price fluctuations.

Solar Energy Research

The Kentucky Science and Engineering Foundation awarded Kaveh Khatir of the Department of Engineering a grant of \$74,190 for “Advanced Research into Application of Solar

Rural Health Outreach

Dr. Donna Blackburn leads a team of health care professionals to escalate a Rural Health Outreach Program in the Institute for Rural Health Development and Research (IRHDR) in WKU’s College of Health and Human Services. The team is drawn from the Public Health, Allied Health and Human Services, and Nursing departments. The U. S. Department of Health and Human Services’ Health Resources and Services Administration funded the \$483,750 project. It grows from work already performed by WKU’s IRHDR under the direction of Staci Simpson. This project has already made an impact on our rural regions because it tackles the health care barriers residents face by making health care accessible, available, and affordable. It is especially valuable for Kentuckians who have no health insurance or are under-insured. The project aims at arresting health care decline.

The team works in rural regions

of the state via a mobile health and wellness unit to promote health care and provide health education/screening services to the underserved and uninsured. The unit’s clinical coordi-



Dr. Donna Blackburn

nator, Beth Rush, oversees all functioning and outings of the mobile unit. Since November 2001, the mobile unit has made 76 outings and served well over 3,200 patients.

Among the health services offered are a variety of screenings, such as

cholesterol, blood pressure, diabetes, oral cancer, and dental problems. In addition, a school based sealant program has been implemented in Allen and Edmonson counties. To date nearly 700 referrals have been made for follow-up services.

The benefits of the project are numerous. Aside from bringing better health to rural residents, the project strives to improve quality of life, prevent and reduce disease, and engage Western’s students in the provision of care in real life situations. To date, 154 students have worked 1,340 hours providing health screenings as well as dental services.

Another project will provide a Hazardous Emergency Awareness Training (H.E.A.T.) unit to prepare rural communities for chemical and biological disasters. Under the direction of Dr. Rod Handy, this very timely initiative has measurable, cost-effective outcomes, and will not only build public confidence but public health as well.