UNIVERSITY OF MISSOURI
Extension

University of Missouri Extension
Building a Bridge to Community Learning

Practical Education For Everybody

Thanks to the federal establishment of "land-grant" universities, millions of people who have never set foot on a college campus can cross the bridge to higher learning.

Every year, more than 1 million Missourians turn to University of Missouri Extension to gain practical knowledge, learn how to compete in the global marketplace, balance the responsibilities of work and family, protect natural resources and adapt to new technologies.

What follows is a deeper look into the history and significance of MU Extension's land-grant designation and several profiles of Missourians who have benefited from each of our key program areas.

Land-Grant Universities: A Closer Look

What does it mean to be a land-grant university? This question-and-answer section explains it all.

Q: What is a land-grant university?
A: Land-grant colleges and universities were established in 1862 by the first Morrill Act. Congress donated 30,000 acres of public land per senator and representative in each state with the intent that the land be sold and the proceeds used to endow and support at least one college.

Q: What is the purpose of "land-grant" universities?
A: The legislation, named for Sen. Justin Morrill of Vermont and signed by President Abraham Lincoln, stated:

> *"… the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."*

In other words, these new colleges were to provide education for working-class people, not just philosophers, theologians or members of the elite. Education at "land-grant" colleges was intended to help people make better use of their resources, contribute to the economy and improve their quality of life.

Q: Was the University of Missouri already in existence in 1862?
A: Yes. Founded in 1839, the University of Missouri is the oldest university west of the Mississippi River. Following the English model of education, the University at the time consisted solely of what later became the College of Arts and Science, offering such programs as literature, medicine, religion and law. In 1870, land-grant funds at the University of Missouri were applied to create the College of Agriculture on the Columbia campus and a new School of Mines in Rolla.

Q: How many land-grant colleges and universities are in the United States?
The University of Missouri is one of 76 universities in the United States with land-grant designation.

Q: Were all the land-grant colleges established under the 1862 Morrill Act?
A: No. The original Morrill Act was passed in the midst of the Civil War. After the war, provisions were made for African-Americans to benefit from higher education. Accordingly, the Morrill Act of 1890 was passed to ensure that some of the federal funds allotted to the states would be used for historically black institutions, resulting in the creation of 17 land-grant colleges including Lincoln University in Jefferson City. Through a memorandum of understanding, MU Extension and Lincoln University Cooperative Extension carry out a shared plan of work. Lincoln University Cooperative Extension programs focus primarily on meeting the needs of underserved, disadvantaged audiences.

Q: How did extension become part of the land-grant mission?
A: In 1914, Congress passed the Smith-Lever Act, providing federal support for land-grant institutions to offer educational programs to enhance the application of useful and practical information beyond their campuses. These "cooperative extension" efforts were mandated to take place in concert with the states and local communities.

Q: What specifically was cooperative extension mandated to do?
A: The act states:

Cooperative agricultural extension work shall consist of the development of practical applications of research knowledge and giving of instruction and practical demonstrations of existing or improved practices or technologies in agriculture, uses of solar energy with respect to agriculture, home economics and rural energy, and subjects relating thereto to persons not attending or resident in said colleges in the several communities …

The purpose was to move research-based knowledge from the centers of learning out to people where they lived and worked.

Q: Where did the idea for cooperative extension come from?
A: Several initiatives laid the groundwork for cooperative extension. Sen. Justin Morrill believed that education for the masses is the key to democracy, peace and prosperity. This belief took root throughout the early 1800s, and in 1867, the first woman was

admitted to the University of Missouri. Additionally, Seaman Knapp, a farmer and teacher at the Iowa State Agricultural College, was appointed in 1902 by the U.S. secretary of agriculture as special agent for the promotion of agriculture in the South**.** Knapp launched a system of federal demonstration farms in Arkansas, Louisiana and Texas, which encouraged farmers to employ new production methods while decreasing their individual risk. These farms laid the groundwork for passage of the Hatch Act in 1887, mandating creation of agricultural experiment stations for scientific research. Knapp and others also began homemaker demonstration projects and boys and girls clubs, the forerunner of today's 4-H. By 1915, there were boys and girls clubs in 47 states.

Q: How did county government become a part of the extension movement?
A: In 1955, state legislation created elected councils in counties to partner with the University in administering and funding local extension activities. Statute 262.597 states that,

> *"The council, in cooperation with the county commission and the university, shall prepare an annual financial budget covering the county's share of the cost of carrying on the extension services …"*

Q: What have land-grant universities accomplished over the years?
A: Thanks to land-grant universities, millions of young people—as well as citizens who have never set foot on a college campus—have accessed higher education. People from all walks of life have learned new discoveries in plant and animal science, medicine and human relations. Rural and urban economies have been revitalized, natural resources have been protected, families have been strengthened, and youth have increased skills and have expanded their minds. Communities have learned to make the most of their resources, and individuals have learned how to become local, state, national and international leaders.

Q: What are the University of Missouri's financial advantages and responsibilities as a consequence of the land-grant connection?
A: Smith-Lever funds are allocated to take research findings to the people. Without those funds, only research and teaching funds would be available to carry out the University's mission. Cooperative extension appropriations broaden the University's scope of activity, including taking programs in health and nutrition to populations who would otherwise not be able to afford them. A requirement for receiving Smith-Lever funds is that the dollars must be matched one-for-one with nonfederal cash—including state allocations and program fees. Another USDA requirement is that states must gather stakeholder input to determine the best mix of programming using federal dollars. Those processes help MU Extension to stay in touch with local needs and to plan accordingly.

Program Profiles:

Agriculture
Production and Genetics Research Improves Beef Producers' Profits

Rancher Mike Kasten knew that healthy and well-managed, quality heifers were the key to his farm income. So when he learned of the Show-Me-Select Replacement Heifer program, he immediately saw its value.

The Show-Me-Select program is designed to improve long-term reproductive efficiency; enhance communication among farmers, regional livestock specialists and veterinarians; improve the management of cow herds across Missouri; increase marketing opportunities and profits for Missouri-raised heifers; and create reliable sources of high-quality replacement heifers—a big advantage for Kasten, who sells heifers to other farmers. "We now have an objective benchmark of quality, whereas before it was just arbitrary," he says.

Not only does Show-Me-Select positively impact farmers who sell heifers, but it also benefits farmers who purchase them—farmers who typically replace 10 percent to 15 percent of their cow herd annually due to age, reproductive problems or overall performance.

According to David Patterson, state beef specialist and animal science professor, replacing these females has long-term effects on profitability. "With more than 2 million beef cows on 60,000 farms statewide and roughly 1 million heifers produced annually, there is significant potential to add value to a large, untapped segment of Missouri's beef herd," he says.

Show-Me-Select adds value by using extension programming and education to connect with farmers such as Kasten. According to Kasten, "This outreach effort is a huge step for the university—and Missouri farms."

The economic impact of the Show-Me-Select Replacement Heifer Program is estimated to exceed $3.5 million annually.

4-H Youth
Research Affirms Value of 4-H Camp Counselor Experiences

Hannibal-LaGrange College freshman, Jordan Hawker, knew she wanted to be a physical therapist, but she didn't know she would want to work with kids—until her experience as a 4-H camp counselor. A frequent camper herself since she was 9 years old, Hawker says her counselor experience helped her have more patience with children and has encouraged her to be a better role model.

A study of 194 camp counselors in 2007 by University of Missouri Extension measured counselors' experiences in areas such as interpersonal relationships, identity, initiative, teamwork and social skills. According to regional 4-H Youth Development Specialist Don Nicholson, the results were consistent. The counselor experience is positive in every way—in developing communication skills, personal confidence, compassion and the ability to help kids through tough experiences. In fact, 73 percent said it helped prepare them for college, and 63 percent reported an increased desire to stay in school.

Until recently, attempts to measure the value of serving as a camp counselor have been rare. Missouri is a national leader in evaluating that role and is using results of its research to equip and empower teen camp counselors across the state. Nicholson is confident the research would apply to other states and youth organizations as well.

"Factors of belonging, mastery of skills, generosity and independence are common in most camps," he says. "And any place where they are present, it seems good things are going to happen."

Business Development

Interns' Environmental Research Projects Save Businesses Money

One way for businesses to stay in the black is by "going green."

The MU Extension Business Development Program and College of Engineering are partnering to help Missouri industries improve their bottom line by becoming more environmentally friendly.

"Our researchers and faculty are finding new and better ways to reduce energy waste and eliminate environmental hazards," says Marie Steinwachs, project coordinator. During a 10-week summer internship, University students apply engineering research at host companies. "Students are hungry to get their teeth into real-life experiences where they can be challenged to put their knowledge into action," Steinwachs says.

MU senior Nathan Kraus looked at minimizing solid waste at transformer manufacturer ABB Inc. in his hometown of Jefferson City. Kraus identified more than $36,000 in annual savings that could be realized by recycling what the company paid to throw away, in addition to more than $41,000 in possible annual energy savings by better insulating plant furnaces.

Kansas City intern Chris Applebury worked with Cargill in Marshall to determine that a heat exchanger could reduce the company's use of natural gas to heat water, increase the efficiency of its refrigeration system, and reduce its use of electricity and natural gas, saving the plant more than $100,000 annually.

Intern Sean Crockett identified ways Boeing Integrated Defense Systems of St. Louis could save more than $66,500 annually while reducing its carbon footprint. Crockett

says he not only gained real-world experience, but obtained “critical analysis skills in the field—skills that are sometimes difficult to learn in a classroom.”

In the first year of the program, five students saved three Missouri industries more than $261,000.

Continuing Education
Nursing Continuing Education Research Helps RNs Become Leaders

Shirley Farrah, assistant dean for nursing outreach and distance education at the MU Sinclair School of Nursing, has known for years that long-term-care nurses are “lone rangers.”

“They are often in rural and underserved areas, have no colleague reference group, face unfamiliar regulatory issues and lack a leadership or management background,” Farrah says.

To bring these nurses into the fold, Farrah obtained a federal grant to host the MU Leadership Development Academy for RNs in Long-Term Care. The certificate program is offered in eight sessions during a nine-month period at six sites across Missouri. The innovative and evidence-based curriculum offers a mentoring component, ongoing interaction with peers and faculty, a class project and an optional professional development day, as well as continuing education credit.

What differentiates the academy from other continuing education opportunities is research, Farrah says. To create the program, Farrah developed an advisory council. The members reasoned that if the point was to think critically, problem-solve and incorporate learning into daily practice, the nurses needed to get away from the work setting and come together.

With research in hand, participants from the first year say the academy has helped them network with peers, grow as leaders, learn about industry trends, develop interpersonal skills to better serve others and change the way they see leaders and themselves.

“My participation has influenced the way I perceive my position as nursing director,” says Jody DeLuca of Rolla, “especially in effecting change. I now perform more as a leader than a manager.”

Human Environmental Sciences
Fitness Program Puts Activity Guidelines Into Action

For Missouri youth, good health is literally a hop, skip and jump away, thanks to the MyActivity Pyramid offered through MU Extension.

Extension health and fitness specialist Steve Ball led development of the pyramid, which complements the U.S. Department of Agriculture's MyPyramid and the government's comprehensive *Physical Activity Guidelines for Americans*, a document that recommends at least 60 minutes of physical activity daily.

Using an easy-to-understand graphic is a fun way "to show kids, rather than tell kids, how they can be active," Ball says. "We're not trying to prescribe an exercise program. We're trying to provide teachers, parents and kids ideas on how they can be active and accumulate more activity throughout the day."

According to Mary Smyser, coordinator for MU Extension's Family Nutrition Education Program, the activity push is working. Smyser, who works with nutrition educators in 16 counties in Northeast Missouri, says schools using the program "realize the importance of physical activity breaks and how they benefit students physically and mentally so that they can be better learners."

Developed primarily for kids ages 6 to11 with input from youth in rural and urban areas throughout Missouri, the MyActivity Pyramid recommends a two-hour limit on TV and video game playing as well as a minimum of 60 minutes of regular activity daily.

"Teachers appreciate the nutrition and physical education activities because a lot of times schools are strapped with getting in all of their educational programming," says Smyser. "Teachers are seeing improvements in physical ability, coordination and, best of all, an increase in concentration."

Missouri teachers and students aren't the only ones seeing the value of the MyActivity Pyramid, which is being used in 26 other states from New York to California. More than 70,000 hard copies of the pyramid have been distributed nationally and internationally.

Community Development
Economic Analysis Tool Motivates Community Action

Using a powerful research tool from MU's Community Policy Analysis Center, Missouri communities are learning about positive alternatives for economic development and quality of life. Brookfield, with a population 4,769, is one such town.

With a focus on entrepreneurship and retaining youth, Brookfield leaders partnered with the center to jump-start the town's economic engine. After the closing of one of its largest manufacturing plants, Brookfield faced a 1 percent annual population loss. Brookfield's economic director, Becky Cleveland, collaborated with the center, using its "Show-Me Model."

According to center Director Tom Johnson, professor of Agricultural Economics and Public Affairs, this statistical model provides projections of local economic conditions at

a macro level. For Cleveland, it provided a 10-year baseline that predicted what may happen in her community, given current trends.

In addition to a baseline, the center's researchers offer "scenario" analyses. For the town of Brookfield, that included questions such as: "What if the community were able to bring back an additional 3 percent of its graduating seniors?" and "What if the community were able to attract an employer to replace lost jobs?" Other communities use statistical models to examine education, transportation, water, ethanol, economic development, health care, tourism, prisons, agriculture, land use and Medicaid issues.

Like all communities that partner with the center, Brookfield created an advisory panel to work on the baseline assessment, which Johnson says is essential to the process. "The bottom line is that, although information is great, it's what you do with it that matters."

"Through our work with MU Extension, we have decided that we own the community," Cleveland says. "We cannot just sit back and complain about outside forces contributing to our decline."