

Get involved with NEBRASKA 4-H

In Nebraska, 4-H reaches one in three age-eligible youth across all 93 counties for a total enrollment reaching approximately 140,000 youth. Nebraska 4-H programs are delivered through five primary modes.

“There are a number of ways to be involved in 4-H, all of which are excellent,” said Nebraska Extension Associate Dean Kathleen Lodl.

Camps: 4-H overnight and day camps offer recreational, educational and career exploration opportunities. Nebraska 4-H Summer Camps are offered at the Eastern Nebraska 4-H Center near Gretna and the Nebraska State 4-H Camp near Halsey. Big Red Summer Academic Camps are residential, career exploration camps held at the University of Nebraska-Lincoln.

Special Programs: Special programs, such as robotics, wearable technology and shooting sports, are available to youth across Nebraska and do not require youth to be a 4-H member. Nebraska hosts the 4-H Shooting Sports National Championships each year in Grand Island.

Clubs: 4-H clubs are organized groups that meet regularly to focus on a series of educational experiences. 4-H club members participate in service learning projects, give presentations, serve as club officers and complete educational projects.

School Enrichment: School enrichment programs are coordinated in collaboration with public and private schools. The programs offer nonformal, hands-on educational experiences in classrooms in support of school curriculum.

Afterschool: Afterschool 4-H programs are offered outside of school hours, to youth in kindergarten to 12th grade. Afterschool programs provide a safe environment for expanded learning opportunities.



By: Scott Schrage

‘Wearable tech’ curriculum aims to fuel interest in STEM

Sensor-embedded shirts. Bluetooth-enabled shoes. Camera-equipped glasses.



The age of “wearable technology” has arrived, and with it a potential avenue for engaging elementary students in the STEM fields of science, technology, engineering and mathematics.

With nearly \$1 million of support from the National Science Foundation, an interdisciplinary team from UNL and University of Nebraska at Omaha (UNO) is crafting a curriculum that will allow students to learn the science behind the fashion-forward technology.

Spanning both classrooms and afterschool programs, the three-year project will offer inquiry-based activities to roughly 900 students in grades 4-6 who attend public school in Nebraska.

The curriculum will give students access to kits featuring conductive thread, LED lights, sensors and other components commonly found in high-tech garments. Students will also work with microcontrollers, which include miniscule circuit boards that can be programmed to direct the various devices attached to them.

The research team envisions such activities helping students learn basic principles of engineering design—including electricity and circuitry—that they can then apply to create LED-encrusted bracelets and other apparel.

“It’s hands-on, minds-on (activity), and all of the technology is exposed,” said Brad Barker, UNL associate professor and 4-H science and technology specialist. “They’re manipulating an object in the real world. We’re hoping to teach these students to think like engineers, and wearable technology is the vehicle that we’re using to do it.”

“The next science standards specifically focus on engineering, but engineering traditionally is not taught in schools, especially at these grades. We saw an opportunity to fill that gap with this new curriculum.”

The research team will subsequently examine whether the curriculum enhances students’ engineering-related knowledge, skills and attitudes—particularly their interest in the field’s many potential careers.

“This is an age when students are very impressionable,” Barker said. “By fourth or fifth grade, many are self-selecting out of science and engineering. We think an intervention at this age group could be especially important for keeping them interested.”

Barker’s team also aims to determine whether wearable technology encourages more STEM participation among females and other traditionally underrepresented groups. A pilot study found that girls constituted roughly 60 percent of participants.

The multidisciplinary nature of the technology is reflected in the composition of Barker’s team, which includes Gwen Nugent, research professor at UNL’s Nebraska Center for Research on Children, Youth, Families and Schools; Carl Nelson, UNL professor of mechanical and materials engineering; Jennifer Keshwani, UNL assistant professor and science literacy specialist; Neal Grandgenett, UNO community chair of STEM education; Kim Larson, coordinator of professional development for the 21st Century Community Learning Centers program; and Michelle Krehbiel, UNL associate professor of youth development.



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Showing examples of wearable tech designed by 4-H students are (from left) Michelle Krehbiel, Carl Nelson, Jennifer Keshwani and Brad Barker.

