

Another Advancement In

STEM Education



Iowa State University informing decision-makers about research in Science–Technology–Engineering–Mathematics Education

ISU professor says gardens can grow science and math skills

As the recession deepens this spring, thrifty Americans are planting vegetable gardens nationwide. While this might invoke thoughts of fresh produce – and fatter wallets – it probably doesn't bring to mind math and science education.

But Katherine Richardson Bruna, associate professor in curriculum and instruction at Iowa State University, believes that gardens are the perfect place to grow the STEM education skills of U.S. Mexican students.

Richardson Bruna hopes to initiate her first school garden in Marshalltown, where, according to Marshalltown Community Schools, Students of Mexican heritage account for 40 percent of the district's total enrollment.

"School gardens aren't a new idea," Richardson Bruna said. "What's new is thinking about them as a tool to help teachers realize that outside-of-school activities can help culturally- and linguistically-diverse students acquire math and science competencies."

Through Richardson Bruna's Carmen Sosa Farming Curriculum Project, U.S. Mexican youth and other students, parents, and teachers will participate in after-school gardening activities on Marshalltown Community College's organic farm.

Richardson Bruna said gardening will allow these youth and their teachers to affirm the agriculturally-based knowledge and skills that many families bring from their communities in Mexico and to recognize and leverage their intimate connection to math and science practices.

"Planning their garden requires using visual information to make mathematical calculations," Richardson Bruna said. "They have to answer questions like, 'How much space does one pepper plant need? How many plants are in each row? How many total square feet will the peppers take'?" In the



Katherine Richardson Bruna (left) uses concepts of gardening to improve the math and science skills of Mexican heritage students.

growing phase, keeping journals with recordings, predictions, and explanations reinforces the basic life science [lessons] they learn in school."

According to Richardson Bruna, the project will also help make teachers more open to incorporating a more culturally-responsive curriculum in their classrooms. Richardson Bruna is working with ISU Extension staff to modify their agriculture-based curriculum, and received positive feedback from U.S. Mexican families in Marshalltown last winter, as enrollment in her curriculum pilot phase increased from three to 13 students.

The current project is funded through the Iowa Math Science Education Partnership (IMSEP). Richardson Bruna reported that project participants will work together in submitting a proposal for further funding to the National Science Foundation.

"Ultimately, the vision is to get these school gardens – and the improved education and community understanding that can stem from them – happening in all demographically-transitioning communities in Iowa," Richardson Bruna said.

For more information:

Check out other STEM education stories from the College of Human Sciences at www.hs.iastate.edu/news/stem.