

SIUE STEM Center looks to reach community

Segue/Logan Cameron |

On this week's episode of Segue, College of Arts and Sciences (CAS) Dean Greg Budzban, PhD, hosts Sharon Locke, PhD, director of SIUE's Center for Science, Technology, Engineering and Mathematics (STEM) Research, Education and Outreach.

The two scholars primarily focus conversation on the various techniques the STEM Center is utilizing to engage students with education, both on-campus and in the community.

Locke has a doctorate in geology from the University of Minnesota. Her pathway to STEM education was somewhat unconventional – she began as a professor of geology at a small college, but embarked on a new professional journey after falling in love with leading professional development workshops for teachers.

A woman who has truly been dedicated to STEM education and research throughout her career, Locke joined the SIUE STEM Center in 2010, coming from a position at the University of the Witwatersrand in Johannesburg, South Africa, where she worked with science educators for nearly two years. Prior to her experiences in South Africa, Locke learned much about national STEM education and research during her appointment with the National Science Foundation in the Washington, D.C area.

Budzban and Locke quickly found common ground, with each explaining their passion for driving teacher and student success. Budzban shares, "I've worked with teachers and students, and it's so rewarding to actually see an impact that you know is going to eventually end up in a classroom and inspire future students."

Among the SIUE STEM Center's signature programs are Minds-on Science Activities in the Community (MOSAIC), the Robert Noyce Scholarship and Internship Program, and Digital East St. Louis.

Building on an early grant from SIUE's Meridian Society, MOSAIC seeks to bring STEM to youth in community organizations, focusing efforts toward the needs of underserved communities, in particular. Through activities such as designing a building to withstand an earthquake, and imitation of the human digestive system, MOSAIC engages elementary and middle school students from all backgrounds in STEM education. As scientists are often subject to stereotypes and misperceptions, Budzban adds, "These programs are truly expanding the vision of both what science is, as well as who is doing it."

Locke emphasizes the importance of engaging students with STEM education at a young age, as interest in these fields begins to wane as they enter their adolescent years. "Children are naturally curious – young children can usually be found outside exploring nature and looking at rocks," she explains. "Then something happens, and there's a shift in their thinking about what science is. So, we're trying to capture their interest and maintain it during that critical period."

To exemplify the power of such programs, Locke shares a story of a high school student who displayed a particular hesitation to an SIUE STEM Center science program in Brooklyn, Ill. "This young man, in particular, was really disinterested in science," says Locke. "By the end of the program – which was in forensics and crime scene investigation – the school told us that his interest in science and school overall had improved, and science had become one of his favorite courses."

Through the Noyce Scholarship program, SIUE provides scholarship and internship opportunities to outstanding students seeking careers as teachers of mathematics or science in high-needs school districts. Gaining access to extra seminar opportunities, extensive classroom observations and direct faculty mentorship, Noyce scholars are rewarded \$11,500 each year to go toward tuition during their junior and senior years. "We

currently service about a dozen Noyce scholars at SIUE, and it's a program that we're so excited about," shares Locke.

Locke further explains an internship opportunity available to freshman and sophomore students both at SIUE and surrounding community colleges through the SIUE STEM Center. As a paid summer internship, students perform community outreach through science-based summer camps and programs. "Each summer, we hire 14 interns to this program," explains Locke. "What is nice about this program is that freshmen and sophomores don't necessarily have a lot of access to internship opportunities. Students also do not have to necessarily be majoring in science – some interns simply have an interest in science, teaching or improving communication skills."

Budzban and Locke transition to discussing Digital East St. Louis, an ongoing project with middle school students in the East St. Louis School District. An interdisciplinary project of the digital humanities, Digital East St. Louis combines local historical data with website design. In collaboration with CAS and an SIUE professor in the Department of Curriculum and Instruction, the goal of the program is to generate student interest in web design, computer coding and programming, database creation, and metadata through their community's history and culture.

Budzban expresses his excitement about the potential of this program, explaining, "When I first heard of the program, I thought, 'What an obvious way to connect students with technology, but through things they're going to be interested in.'

"It's also significantly community-based. I can see students going to their parents and giving oral history lessons about their community. It's something that has the potential to spread throughout a community and naturally perform community-based educational outreach."

The hope for Digital East St. Louis is to replicate the program in other communities, both locally and across the U.S. "Place-based education has been proven as an extremely effective way to keep students motivated and engaged in a topic," says Locke. "We hope to develop a curriculum that other youth educators could use to walk students through similar projects."

To conclude their discussion, Budzban and Locke discuss the solar eclipse that will occur in August 2017 – coincidentally, the first day of classes during SIUE's fall term. They mention interdisciplinary collaboration initiatives that are already taking place across campus in preparation, citing a partnership with the SIUE Department of Physics to release high-altitude balloons for data and live video capturing of the solar eclipse.

Budzban shares, "Interdisciplinary collaboration is a testament to the culture on this campus, in which faculty from different disciplines work together to create exciting opportunities for their students and outreach for local schools."

Locke agrees, "It's one of the things that attracted me to SIUE. I've always been interested in interdisciplinary approaches to science, and this campus is ideal for that.

"The STEM Center is meant to be a hub. It's a community of scholars and educators who are trying to bring people together through an interest in STEM education."

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By Logan Cameron, SIUE Marketing & Communications