



Giving students a “leg up”

Last fall, Clacy Percy began collecting plants at the former Gilt Edge Mine, a federal Superfund cleanup site, for a class at Lead-Deadwood High School. Her project, part of the high school’s new STEM (Science, Technology, Engineering and Math) research class, will help her determine what, if any, heavy metals are in the plant tissue.

The high school, in partnership with Sanford Lab, first offered the class in fall 2013. “The class gives students the chance to experience and understand what goes into conducting original research,” said science teacher Robin Dirksen. “They start with a question then do all of the background research, design their project, conduct tests, and analyze and present their finding.”

Science Education Specialist Julie Dahl worked with Dirksen to design the class. The goal is to “help students gain valuable scientific experience with experts from the lab and other educational institutions in the region.” Finding mentors is a critical



From left: Robin Dirksen, Clacy Percy, Julie Dahl, Courtney Gould, Cobi Stokes, Danielle Brown, Angeliese Wisdom. Inset: Clacy Percy (right) with her mentor Bree Reynolds.

component of the class, Dahl added. “They serve as guides for the project.” Right now, professors and scientists from Black Hills State University, South Dakota School of Mines & Technology and Sanford Lab work with the students.

Bree Reynolds, STEM Education Specialist with Sanford Lab’s Education and Outreach Department, mentors Percy. “I helped her determine goals, evaluate the feasibility of her question and help broker communications with experts in different fields.”

Eventually, Dahl and Reynolds hope this class can serve as a model for other school districts in South Dakota and even around the country. “Our goal is to give students a leg up when they go to college,” Dahl said. “Doing original research helps them see science as a way to address issues and solve problems.”

The class benefits

students even if they don’t choose college, Reynolds added. “They graduate with critical thinking and communication skills, which they can apply in any career.”

Dirksen is in her third semester of teaching the class. “What they learn is so powerful,” she said. “The partnership with Sanford Lab creates unique experiences in science, but it also connects them to their heritage because many have grandparents or parents who worked at Homestake. It really helps them understand this transition to science.”

Hanson takes the lead

Behind the Scenes

As a Lead Infrastructure Technician at the Ross Shaft, Rodney Hanson has his hands full. He and his crew tear out old steel and install the new ground support and steel that will support the cage for future science. It requires careful planning before each shift and constant awareness of potential hazards, he said.

“I’ve got an awesome crew,” Hanson said. “They understand the work and

make sure it is done correctly and safely.”

Hanson worked with Homestake from 1991 to 2002; he came back in 2007 to work for Dynatech, then hired on with Sanford Lab. “I basically grew up in these shafts,” he said.

Shaft Foreman George Vandine said, “Hanson is a great leader with outstanding skills.”

Hanson loves to hunt, fish and camp—and spend time with his wife, Kelly, and two sons.



Student research projects at a glance

- Cobi Stokes, Senior, is designing a jacket for a CRDS system for use in argon impurity detection.
- Angeliese Wisdom, Sophomore, wanted to know: “What in Coke-A-Cola and Dawn Dish soap cleans my dad’s greasers?” Her project focuses on the chemistry of these two products.
- Clacy Percy, Senior, is investigating plant uptake of metals at the Gilt Edge Superfund site.
- Danielle Brown, Senior, is designing an experiment that observes how the Sanford Underground Research Facility water treatment plant effects the free floating bacteria in Whitewood Creek.
- Courtney Gould, Senior, is studying the toxicity of *Tanacetum vulgare* (Tansy) on California blackworms—which were introduced to a concentration of essential oil. She found that camphor and thujone are two volatile oils that are toxic to the worms.