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## Virtual DUSEL to be major education component for lab

BY WENDY PITLICK  
Black Hills Pioneer

LEAD - A virtual deep underground science and engineering laboratory that can be utilized by internationally renowned scientists as well as students of all ages is on the horizon as a possible main component of education and outreach for the federal DUSEL proposal.

Dubbed as the vDUSEL, scientists from universities across the state as well as with the Homestake Collaboration are working on the Web-based outreach program. Though still in its genesis stages of development, Stephen Krebsbach, academic coordinator for the Computer Science program at Dakota State University who is heading up the effort, said the vDUSEL will allow scientists to transmit and access necessary data, as well as allow students to take a virtual, live tour of the lab, and play games that will allow them to learn about the science going on in the mine.



Dr. Stephen Krebsbach

"The idea of the whole Virtual DUSEL is not to be a traditional Web site where people will log on and come to find out about the mine," Krebsbach said. "The idea of the Virtual DUSEL is we are going to try and bring DUSEL to them."

Though the idea has been floating around among scientists for years, Krebsbach said it only started to take off this last fall.

"We would envision the starting page being you are basically at the mine," he said. "If you wanted to tour through the mine you can get on the elevator and go down and visit the different laboratories. You may have a choice of going to a laboratory where there are virtual experiments that you can work with, or meeting scientists or learning about what is going on. Or, from the high-end it may be that you've come there to get data that has been collected by different scientists. In that aspect the Virtual DUSEL is to bring that data to them in a way that is useful to them from the outside. The distance aspect is a lot of it, but the idea is to try and make this more of an experience. Under that umbrella, it can manifest itself into a lot of different types of projects."

Key players who are leading the effort to develop the vDUSEL, Krebsbach said, include Judy Vondruska, a physics professor at S.D. State University, a former high school teacher from Mitchell who is heading up the education assessment group for the site; Dr. George Hamer of S.D. State University who is developing a team to work on the infrastructure of the vDUSEL, including how all of the data will be stored and accessed; and Dr. Steve Graham, associate professor of Computer Game Design at Dakota State University who is working on the virtual environments for the site, including developing games for children to play that will help teach them about the science in the lab.

"Virtual games for education purposes is one of the focuses of Virtual DUSEL," Krebsbach said. "I think a lot of people see that as a great promise for Virtual DUSEL. It could be that this is something that students are learning about different science aspects that are going on in the mine from physics to the geology or earth science."

Additionally, Krebsbach said his team is working very closely with Dr. Kevin Lesko, principal investigator for the Homestake Collaboration, officials at the Sanford Lab, and



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Black Hills State University's Dr. Ben Saylor, who is heading up the education and outreach effort at the Sanford Lab.

Since the vDUSEL is still in its planning stages, Krebsbach said one of the missions for his team is to seek out funding for the project. The S.D. Board of Regents just contributed about \$20,000, which will be used for a symposium next month at Dakota State University, where all the players will start collaborating on the project. Krebsbach's team is also working to research other possible funding options. A proposal has also been drafted for a grant from S.D. EPSCoR, through the National Science Foundation for \$75,000 to be distributed over two years to support organizational building for vDUSEL.

Saylor, who told the S.D. Science and Technology Authority board of the efforts to develop the Virtual DUSEL, said scientists and collaborators see it as a great outreach program that will also generate more traffic at the lab site.

"We see this as a way to reach out to students by distance, but also as a lure to bring them to the site ultimately," he said. "(Students) can do something at their home institution, then travel to the site (in Lead, and do more things.)

Overall, Krebsbach said his team hopes to have a small part of the vDUSEL up and running this spring. But the full project, he said, will roll out in phases and will be constantly changing with the different science experiments in the lab.

"Virtual DUSEL has so much potential but it is a vision kind of a thing and there are a lot of components underneath it," he said. "So a lot of what we're doing right now is to try and come up with an organizational structure of how we're going to move forward."

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