Digital Learning in South Dakota

Statewide efforts to provide all schools with the infrastructure and equipment for Internet access resulted in increased student engagement, communication between students and teachers, constructivist teaching, lesson adaptabililty, and student-centered teaching.

By Wade Pogany

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Across South Dakota, high school students are accessing the world with laptops. Education in this vast prairie state is not hindered by geography because many students connect to video and teleconferencing courses and take classes online. Traditional face-to-face courses using technology have grown too, allowing students to get information at a rate they have never had before. So what do those new learning environments look like and how are teachers learning to use technology in their classrooms?

Over the past five years, one-to-one laptop initiatives have taken root in many South Dakota high schools and even several middle schools. Two studies have looked at the changes that were occurring in classrooms and how teachers were changing as a result. This article describes a few of those changes and strives to inform educators about the lessons learned in South Dakota.

Building a Technology Infrastructure

The technical infrastructure that connects the South Dakota K–12 education system started in 1997 with the Wiring the Schools project, which installed state-of-the-art wiring in all 170 South Dakota school districts and universities. In 1999, the Connecting the Schools project set up a networking infrastructure to connect schools to the Internet and provide teleconferencing systems within every district and university. This system, the Digital Dakota Network (DDN), provides high-speed Internet access, e-mail, Web hosting, and technical support to all public schools in the state.

The DDN became a statewide interactive video communications system using digital technology to give schools teleconferencing capabilities so that they could provide distance education. The DDN also connects the executive, legislative, and judicial branches of state government; the Board of Regents; private universities; the four public technical schools; municipal governments; and the K–12 community.

From 2005 to 2008, the SD Department of Education provided incentive funds through the Classroom Connections project to promote the use of one-to-one laptops in high schools. By the end of the project, 10,700 students in 55 high schools had laptops and more than 1,000 teachers had been trained to to integrate the laptops into their classrooms. Today, 80 high schools and more than 13,000 students are learning with laptops.

Lessons From South Dakota

Two separate studies looked at the effects of teachers using laptops. A case study of four school districts involved in the Classroom Connections project and an independent study sponsored by the SD Department of Education revealed several interesting results (Pogany, 2009; Steel, 2009).

Access to laptops changed the learning environment of the classroom significantly. Students were more engaged in their learning and educational activities. Teachers reported that students were more organized and engaged in the lessons. The studies found that communication among parents, teachers, and students expanded significantly. Students and parents used e-mail at a higher rate to communicate with teachers inside and outside of the classroom. Students and teachers said that laptops have facilitated an increase in the amount

of research and writing. Students can more readily be self-directed learners and teachers can more easily take advantage of teachable moments as a result of 24-7 access to laptops.

In addition to those positive results, two other findings from those studies were of particular interest: teachers tended to become more constructivist in their teaching with laptops, and teachers were able to adapt their lessons because of the expanded access to the Internet.

Both studies showed evidence that teachers using laptops had a tendency to be more student centered than teacher centered.

A few teachers did not refer to their teaching methods as constructivist but talked about various applications they used with the laptops. A geometry teacher discussed how he taught real-world applications with Geometry Sketchpad. In a history classroom, the teacher used video clips to enhance his discussion of historical events and students created projects. Students in speech class used PowerPoint: "In speech class the students use their laptops and do a lot with PowerPoints in their presentations" (Pogany, 2009).

A biology instructor discussed how laptops gave him and his students greater access to science software: "There are fabulous science applications on the Web. I couldn't use them before because I did not have the means, but now we can go to any website" (Pogany, 2009).

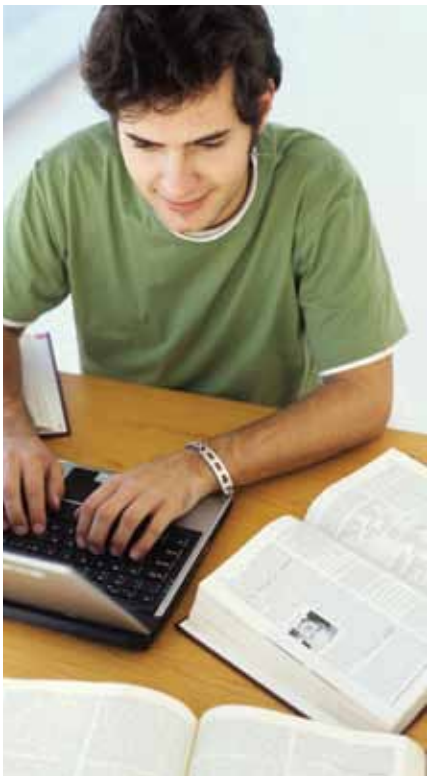
A few teachers said that laptops could help them use more project-based learning. Engaging activities that enabled students to research and conduct collaborative projects were also evident. One teacher has taken teaching beyond the classroom:

> I'm working on something called Project Do Something with my juniors next semester. It's a real world application. Basically, they need to identify a problem in their community, something that's going to benefit the community. They will then research that problem. The web tools will help them with their research, to find solutions. Another teacher noted, I think you see more student-centered projects in a laptop classroom. I did a cooperative learning project in my Trigonometry class last week and it worked really well. (Pogany, 2009)

Although a few teachers expressed some frustration at not knowing how to become more constructivist, they thought laptops could be a tool to help them be more student centered in their methods. They talked about the need for more professional development to implement those strategies in the classroom: "I'd love every class to be that way, to actually have a product at the end, a real life product, but how do we turn our classes into that?" (Pogany, 2009).

Lesson Adaptation

Teachers who were interviewed for the Pogany (2009) study commented that the laptops changed their teaching methodology by expanding their options for accessing information. Teachers can challenge students to find new information on a given topic. They can immediately study a topic in depth, sometimes taking their discussion in several different directions. One teacher called it "lesson adaptation." Her realization was that, with the laptops, she could rapidly



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respond to the classroom discussion. She talked about how laptops gave her the ability to change the lesson on the basis of the questions students were asking: "We could immediately get online and find the information, thus expanding the knowledge we originally had. You can adapt much more quickly to make meaningful learning for everyone" (Pogany, 2009).

Internet access has expanded the availability of resources for teachers: "Being able to go online and find activities has helped me as a teacher. I think access to the Internet has helped teachers evaluate students [and] what they're learning" (Pogany, 2009). One teacher noted that her resources have grown significantly beyond just using the textbook: "The ability to go online and find lessons and activities has been a significant change in my teaching" (Pogany, 2009). Another teacher said, "Now I have a lot of different tools to use in my teaching" (Pogany, 2009). A science teacher concluded, "My focus of delivery has changed; I can…bring more up-to-date material back to use in my lessons" (Pogany, 2009).

Laptops are not a panacea for education, but they can be an invaluable resource for learning. As technology evolves, so must teachers change how they use it in their classrooms. **PL**

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