

Distance Learning

6 Ways Videoconferencing Is Expanding the Classroom

With instant access to international collaborators, virtual field trips and courses in other districts, learning can happen anywhere in the world.

- By **David Rath**
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Three years ago, more than 125 students in three high schools on the Kenai Peninsula of Alaska spent the night sleeping at school in order to be awake for a 4 a.m. videoconference with students in Nazareth, Israel. After the students' virtual meeting, parents arrived at the schools to cook them breakfast. The students showered and went on with their normal school day.

This kind of meeting has become increasingly common as **Kenai Peninsula Borough Schools** have embraced videoconferencing technology as a way to open up students' connections to the lower 48 — and the rest of the world.

More recently, **Kenai Central High School** world history teacher Greg Zorbas and **Skyview High** history teacher Rob Sparks have had students working on longer-term projects with students in Palestine and Ghana. "Teams made up of students from Ramallah and our school developed conflict trees to understand root causes and effects," Sparks said. "They posted their work in our Google Community for everybody else to see."

Over the last decade, as high-speed Internet has become more accessible, videoconferencing technology has grown more sophisticated and easier to operate. School districts are finding an increasing number of innovative ways to bring students together virtually for meaningful interactions, whether for one-time field trips or more extensive long-term collaboration. Here are six examples of the impact video technology is having on classroom experience.

Connecting Classrooms for Collaborative Projects

What Zorbas and Sparks call their "Classroom Without Walls" program has allowed their Kenai

Peninsula students to connect with students in Afghanistan, Israel, Yemen and several U.S. states. But the videoconferencing exploration grew gradually, from the two teachers team-teaching in the same school, to team-teaching from different schools in the same district, to student-to-student collaborative group work.

Zorbas said, "We used videoconferencing to share content between classrooms," but we wanted to take it to the next level. We wanted our students to work together in small groups using videoconferencing. The dynamics of group work is one thing, when you have kids all in the classroom. We wanted two of my students to be working with two of Rob's students and have a videoconference going on as they work."

Using both Polycom **RealPresence Desktop** and then Microsoft **Lync**, they moved from videoconferencing with a big TV set for classroom-to-classroom interactions to a setup in which small groups of students have face time with students in another school to work on projects together. (They color-code individual and collaborative work in Google Docs for assessment purposes. Each teacher assesses his own students' work.)

One challenge has been figuring out which technology is best for students' computer-to-computer collaboration. "Recently we have been doing a lot of things with Google Communities with our foreign partners," Sparks said, "and we may try Polycom's RealPresence CloudAXIS in working with students in Ghana. We just keep searching for whatever works best to solve the problem we have."

They're learning about much more than new technology, according to Zorbas. "The combination of videoconferencing and student collaboration has completely changed the way we teach," he said.

Making Courses Available Anywhere

For the past three years, most German classes that Marissa Wanamaker teaches at **Lincoln High School** in Nebraska also have a student or two attending remotely via videoconference. "I have had students from several rural communities," she said. "It has forced me to rethink how I deliver the coursework every day. I make sure to include the remote students in group activities. My students get excited about working in the remote student's group."

The system allowing rural Nebraska students to study German and other topics that may not be offered at their school is a synchronous course exchange that uses videoconferencing and was established several years ago with state lottery funds. Almost 9,000 Nebraska students per year take courses through the system.

When students from a remote school register for a course at Lincoln High, they actually become **Lincoln Public Schools** students, noted Linda Dickeson, the distance learning manager for Lincoln Public Schools. "They get all the same rights and privileges a Lincoln student gets," she

said, "with their own login and password to resources, and an e-mail account the teacher can use."

To beef up its infrastructure, Lincoln Public Schools has added 22 **LifeSize Video Centers** to control, store and stream video to large flat-screen TVs. These videoconferencing setups are mainly distributed in high schools and the district office buildings.

One course, Literature of the Holocaust, is so popular that Lincoln Public Schools has to turn away some remote students. The teacher might have 30 local students, so the district limits the number of remote students to an additional three per section. The videoconferencing equipment is also used within the district to make some courses, such as Chinese, available to schools that don't offer it. Dickeson said, "We don't have a systemic way to do intra-district offerings yet, but I think the needs are going to drive that more."

In remote areas of Nebraska, the system has allowed for course swaps where one school would offer Spanish and another physics, with their students attending each other's classes remotely. At the end of the year, the state validates all the courses that had videoconference enrollments. The sending school gets \$1,000 for the connection, and the receiving school gets \$1,000. "That was the motivation for this clearinghouse building up over the years," Dickeson said. "It has worked out great."

Nevertheless, the legislation that created the clearinghouse is set to expire after this school year. "We have been camped out with senators over the past year, hoping bills will make it to the floor and give us additional funding," Dickeson said. "But the synchronous course clearinghouse has proved so successful that even if we don't get incentive funding, I think it will still be sustained, because it has served a need."

Overcoming Rural Isolation

It's no coincidence that some of the most innovative work on classroom videoconferencing is coming out of Alaska, where the vast and rugged geography makes travel and in-person meetings challenging. In addition to the Kenai Peninsula example mentioned earlier, **Kodiak Island Borough School District** has been working since 2004 to unite its community of small rural schools, said Phillip Johnson, director of **Alaskans Transforming Educational Access in Communities and Homes** (AKTEACH), which is extending KIBSD's distance-learning offerings statewide.

The initial goal for KIBSD was to focus on improving math instruction in six fishing villages and one town on a road 40 miles from Kodiak. These villages have populations of 40 to 260 people, and the schools there have enrollments of 12 to 45 students. Eighty percent of the students in village schools are Alutiiq (Russian-Aleut).

"Our village students were not getting the level of education that students in urban settings were

getting," Johnson said, because teachers were asked to be generalists and teach multiple content areas. When the district offered village schools videoconferencing access to a teacher who could specialize, with the village teacher facilitating in a co-teacher model, things began to change. "We began to develop our 'One School' concept," Johnson said. "We are sharing staff and sharing students," he said. "We aligned all our schools' schedules and calendars with **Kodiak High School's**."

The district has experimented with several technologies over the years. "We are not married to one technology," Johnson said. "We use a Polycom system; other courses are offered through **Blue Jeans**. We have one-on-one instruction happening with Skype for home-school students."

Johnson said it has been fascinating to watch the impact of the technology on students' relationships and academic performance. "Actual experiences tend to lend themselves to virtual experiences," he said. "When we started this program, we recognized the students were not adjusting to the virtual format. They were shy and didn't like the camera. So we brought all our rural students together for a math and science academy to work on projects together. By the end of that experience, they had developed actual relationships. When they went back to their schools and we started asking them to work in a virtual world again, it had changed the entire experience. They were now willing to interact."

Students who had had very little exposure to other students around the island started to develop relationships, he said. "We began to see behaviors between students that you would expect to see between students in a brick-and-mortar school: students beginning to go off-task and chatting on the sidelines," Johnson said. "For me, that was a great problem to have, because the students had come to a point where they were so comfortable with the technology that the tool was no longer the barrier. It was now the world they were comfortable living in."

In fact, Johnson said, whereas before students from different villages expressed no interest in joining together for team sports, now they play together at the state level regularly and do well. Village students also participate in synchronous orchestra and band classes. They meet with the instructor virtually a few times a week and use **Smart Music** to support their daily instruction. "Then we fly them in from rural communities for concerts," Johnson said. "They perform incredibly well. They have met or exceeded the level of their peers, and blend in with all the other students performing. And they are sort of like celebrities, because the Kodiak High School students have seen them virtually and now here they are in person."

Virtual Field Trips

Not all uses of videoconferencing have to be as extensive as the examples in Nebraska and Alaska. Many school districts have built up a collection of regular "virtual field trips" that their students can take in conjunction with curricular support to prepare the students to appreciate their

experience.

The concept of virtual field trips got a big boost on April 30, when President Obama took part in "Read to Discover a World of Infinite Possibilities," which was part of a virtual field trip series called "Of the People: Live from the White House," sponsored by **Discovery Education** and the White House. The April 30 event featured sixth-grader Osman Yaya interviewing President Obama about his favorite books and love of reading.

In another example, over the last several years California State Parks has fine-tuned and expanded a free distance-learning program called **Parks Online Resources for Teachers and Students** (PORTS), which allows more than 7,000 K-12 students each year to enjoy interactive lessons with park interpreters about the natural and cultural resources in California's state parks.

Lone Tree School, a K-5 school on Beale Air Force Base near Marysville, CA, started doing PORTS classes in 2008 and now does 75 to 100 per year, said technology facilitator Donna Tarble. One of the students' favorite classes is about tide pools, because the ranger has a remote truck she takes down to the beach, Tarble said. Students can explore Crystal Cove State Park's fragile tide pools and learn about the biology and ecology of the park's ecosystem, even though an in-person trip would be difficult to arrange.

Lone Tree has a dedicated videoconferencing room equipped with an LCD screen and a Polycom system. Tarble has taught the teachers how to turn on all the equipment and log in so she doesn't have to be involved unless there is a technical problem. "Teachers tend to be apprehensive when it comes to new technology," she said, "but now we use technology so much here on the campus that we have tried to encourage them to take more on themselves."

Vocational Education

Both virtual field trips and more extensive school videoconferencing programs can give students glimpses of potential careers or help them practice developing skills they may use in the future. Paul Eichelberger, a biology teacher at **Jim Thorpe Senior High School** (PA), has found a virtual field trip that really resonates with his students interested in medical careers. For the past seven years, his anatomy and physiology students have attended an interactive session (put on by the **Center of Science and Industry** in Columbus, Ohio) that allows them to watch a live knee replacement operation. "The students usually say that was the coolest thing we have ever done," Eichelberger said. "The majority of people taking this class are thinking of going into some sort of medical career," he said, adding that they appreciate the chance to see physicians in action and to ask them questions.

Synchronous videoconferencing has had a positive impact on a vocational welding program on Kodiak Island, Johnson said. Previously it had been a blended program with some hands-on instruction, but students were flying in to Kodiak for expensive certification tests — and many were

not prepared. "I drew a line in the sand and said if we can't demonstrate proficiency, then those kids shouldn't come in for testing," he recalled. "Last year we went to a synchronous welding program and the instructor makes sure the students demonstrate proficiency via videoconferencing before their departure from their rural community for certification testing, and the results have been phenomenal."

On the Kenai Peninsula, Zorbas and Sparks stress to their students that in addition to learning history, they also are learning 21st century workplace skills by getting comfortable with videoconferencing and collaborating remotely with Google Docs. "Everywhere you look in the workplace you see the use of face-to-face video," Sparks said. "Most colleges and hospitals are getting into videoconferencing. Five years ago, nobody talked about a videoconferencing coordinator. It wasn't really a job that existed. Now we work with several of them all the time."

Including Homebound Students in Class

At any given time, Lincoln Public Schools may have a dozen students using videoconferencing to attend class due to accident or serious illness. Dickeson also said, "Some students have behavioral problems because of anxiety or autism, where some classrooms are overwhelming for them." When those situations come up, she consults with a special education coordinator to assess whether videoconferencing is an appropriate solution for that student. Lincoln uses a solution called **Scopia Desktop**. "When we were buying our tools in 2010, one of my criteria — a real dealbreaker — was videoconferencing on the desktop," she said. At that time, Scopia was the only desktop videoconferencing solution she could find for Mac and Windows. "It has worked well for us," she added.

Another innovation being deployed around the country is the **VGoTelepresence Robot**, which gives disabled and immune-deficient students a virtual presence in school to allow them to participate in a full school day from home or the hospital. The student operates the VGo with an Internet-connected computer equipped with audio and webcam capabilities.

Rick Lemke, principal of **Durham Public Schools'** Hospital School at Duke University Medical Center (NC), said the district is piloting three VGos in homebound settings and plans to test three in a hospital setting. One of these pilots, he said, "involves a girl who has multiple disabilities, and it has enabled her to participate in a school classroom. She would never have had that opportunity otherwise. It has worked out brilliantly."

He said research shows that students coming back from serious and long-term health issues have trouble transitioning back to school. "We think this technology can minimize the extent to which the transition is difficult if we can keep you connected with school and peers. If you are a transplant patient and are waiting for a heart, you have time and could stay in class. After an operation, while you are recovering, you are still not going to school, but you could virtually. You

could maintain connections and keep the mind rolling academically."

The six VGos that Durham bought cost about \$12,000 each. From one perspective, it is a considerable investment, Lemke noted. "But if it is achieving its intended outcome of keeping these kids in school and they are not falling behind and are prepared to return when medically approved, then it is not much of an investment."

About the Author

David Rath is a Philadelphia-based freelance writer focused on information technology. He writes regularly for several IT publications, including Healthcare Informatics and Government Technology.

Content - editorial@thejournal.com | Website - dnagel@1105media.com

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