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Creating virtual classrooms for rural and remote communities

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Abstract
Students in remote communities face many challenges to get an education. This is especially true for indigenous and native people. To train teachers for these populations, the authors used web-based conferencing, which avoids some of the technological challenges of communicating with students in these communities. The virtual classes also were organized to take students' cultural preferences into account and to create learning communities among students.

Keywords
Aboriginal, communication, community, cultural, distance education, native, rural, software, student, technology, telecommunication, virtual, Web

Creating Virtual Classrooms for Rural and Remote Communities

By Kavita Rao, Michelle Eady, and Patricia Edelen-Smith

Online learning may be the key to enabling in less populous areas to earn teaching degrees and other professional certificates.

Rural and remote communities, in the United States as well as in other countries, often have only limited access to higher education. In order to pursue professional training or advanced degrees, people in these communities must leave home. This causes more than just a financial burden. Those with commitments to jobs, families, and traditional roles in the community find it difficult to leave home to further their education.

This is especially true for indigenous and native people. These people often live in villages or communities far from large cities and towns. Although they're increasingly integrated with the modern world through travel, telecommunication, and technology, these people are deeply rooted in their traditional cultures.

These factors make it difficult to recruit teachers from local populations, especially for such high-need areas as special education, mathematics, and science. While many of

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these communities have nearby community colleges where people can earn two-year degrees, few are close to four-year colleges where they can complete bachelor or postgraduate degrees. Thus, individuals in these communities have few opportunities to enroll in teacher training.

Many colleges and universities provide distance education, but these programs face common problems. Students have identified issues that lead to high attrition rates, including: feelings of isolation, too much reliance on text-based learning, and difficulty accessing computers and Internet. Students face additional challenges when instructors based in urban areas or in other countries don't understand issues specific to their local communities. For students from indigenous cultures who live in traditional, village-based settings, community-based knowledge and lessons learned from elders are important sources of education that are often ignored in distance education courses. Institutions that provide distance education need to consider the unique settings and situations of these learners.

While we focus on lessons learned in our work with indigenous community members, many of these lessons are relevant for other rural communities. Issues shared by all students in rural and remote communities include limited access to higher education, minimal mentoring programs, and a strong sense of community strength. An aspect of particular importance to students from rural communities is the sense of ownership and pride in both the content and the context of what's being learned.

Web Conferencing

Web-based conferencing can be incorporated into distance learning to address the challenges faced by rural students. A number of conferencing systems — such as Elluminate *Live!*, Saba Centra, Adobe Breeze, and Cisco WebEx — are available and all of them work over the Internet. The college buys licenses for the web-conferencing system, and faculty and students can click on an Internet address to access the online "meeting room." No software needs to be installed on an individual's computer. However, students do need some basic equipment: a computer connected to the Internet, a microphone, and a webcam for the computer so users can interact via audio and video.

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The virtual meeting room has a whiteboard on which the instructor can place a presentation (e.g., a PowerPoint file). Participants are listed on one part of the screen, and each participant can talk to others in the room by clicking on an icon that activates their microphone. If a participant prefers to communicate by text, the online room also includes a text-chat feature. As in a traditional classroom, the instructor and students can have a discussion, talk and listen to each other, and use virtual signals to communicate questions and feelings. Participants interact visually by using icons, such as a raised hand to signify a question, a happy-face emoticon to convey "all is well," and a perplexed face to convey confusion or need for clarification. The web-based system allows the instructor to present slides and web sites, to share files and applications from the computer's desktop, and to poll and query students on topics. Instructors also can place students in online "breakout rooms," allowing them to have small-group discussions while they're logged into the virtual room. With a click of a button, the instructor can bring small groups back together, allowing each group to share with the whole class what they discussed in their breakout rooms.

This virtual space, with its highly interactive features, is a powerful way to connect learners. By using web-conferencing as a major part of an online course, we successfully created learning communities and provided support to indigenous learners in the Pacific, Australia, and Canada.

The key is to use web-conferencing in a deliberate manner and to consider its potential when you're designing an online course. For example, our online courses use both synchronous and asynchronous technologies. Synchronous means all learners are participating at the same time; asynchronous means learners access the materials and the learning at times convenient to them. Asynchronous technologies, such as course management systems, are a good place for instructors to upload resources, post instructions and assignments, and collect student work. Synchronous systems, used in conjunction with asynchronous tools, can enhance the interaction and create a sense of connectedness, which helps to create an online learning community that provides support to students from both peers and instructors.

Cultural Considerations

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When working with indigenous communities, considering the students' culture is very important. Universities that provide distance education to rural populations often are located in urban centers. In many cases, the university is in a different nation or continent from the populations being served. As a result, instructors of online courses may not be familiar with the cultural backgrounds of students enrolled in their courses.

Generally, indigenous societies have a collectivist, group-based approach to living, in contrast to the more individualistic approach of Western societies (Hofstede 1984; Wang and Reeves 2007). Many indigenous societies advocate for incorporating traditional learning methods with Western education frameworks in a way that honors and maintains their identity (Hughes and More 1997). For indigenous peoples whose cultures and ways of life are threatened by dominant cultural mores, the challenge is achieving this empowerment in ways that considers their worldviews, cultural knowledge, and traditional community-based lifestyles.

Web-based conferencing provides a powerful tool for incorporating these learning approaches. Virtual meetings provide a time and space for cross-cultural exchanges and collaborative learning in which student perspectives are accorded equal value. In addition, the instructor in a virtual class can design activities and use resources that promote dialogue and discussion. Students from indigenous backgrounds concur that synchronous learning is a valuable tool that provides them with a supportive education environment (Eady and Woodcock 2010; Greenall 2005; Ho and Burniske 2005; Rao 2007).

Three ways in which web-conferencing can be used to design appropriate instructional environments for indigenous learners include going beyond reliance on text-based learning, overcoming technological challenges, and creating a learning community.

Going Beyond Text

Online courses often are heavily weighted toward text-based instruction. Instructors upload written materials or have students read from textbooks. Students are expected to demonstrate their knowledge in writing. These text-based interactions are an efficient way to communicate asynchronously.

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However, for a variety of reasons, students from indigenous backgrounds find it challenging to rely on text-based interactions. In many traditional communities, people speak vernacular languages, and the language of instruction (e.g., English) may be a foreign language for them. In addition, many indigenous groups have strong oral traditions and rely on verbal exchanges for communication (AISR 2006; MacDonald et al. 2006). For students who face one or both of these challenges, learning new content and concepts through online courses that rely on reading and writing can be difficult and discouraging.

Web conferencing allows instructors to use multimedia resources in addition to text. For a virtual class session, an instructor creates a presentation that contains images and text. During the session, the instructor provides a live narration of the presentation, providing auditory supports along with the visual and textual information on the screen. Since the session is synchronous, interaction and immediate feedback from the instructor is possible, with students asking for clarification or adding their comments to the discussion. Student/instructor communication is ongoing through both microphone and text comments.

The instructor can share a wealth of electronic resources, by using such web-conferencing features as 'desktop sharing' or 'web tours.' These tools allow an instructor to show files on their desktop to students in the virtual class or to lead them through a tour of a web page. In this way, students become engaged in the learning process. Termed "visual instruction" by Alesandrini (2002), the use of multimedia resources as part of a course helps clarify complex topics and allows visual exploration of authentic tasks and environments.

Students also can demonstrate knowledge in multimodal forms. As a course assignment, students can create presentations and narrate them live just as the instructor does. One strategy that fosters a learning community is to have students work in small groups (using phone, e-mail, or technologies such as Skype) to research a topic and create a presentation collaboratively. During the virtual class session, the group can present their slides and discuss their topics.

Technology Challenges

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Two commonly cited "rural/remote" challenges are slow Internet connection (AISR 2006) and a lack of technology skills (Ramanujam 2002; Young et al. 2005). These two technology-related challenges create serious issues for students participating in an online course. The lack of bandwidth or an unreliable Internet connection makes it difficult, if not impossible, for a student to download the necessary files for a course or to complete assignments and upload them on time. A lack of technology skills also can be very frustrating to a student who is asked to submit an assignment online but who doesn't know the basics of word processing, presentation, or other software.

Web-conferencing technologies are appropriate in low-bandwidth environments. Web-conferencing works over any Internet connection and functions even on slower, low-bandwidth connections. Users may need more time to initially log into a session, but once logged in, they're fully able to participate. While low-bandwidth connections may pose occasional technical challenges (e.g., unclear audio and dropped connections), web-conferencing technology is surprisingly reliable and usable even in rural and remote areas.

Students who are new to online courses and lack technology skills will feel unsure about using the technology. Technical challenges place additional pressure on them as they try to learn course content. To mitigate the technical issues and the isolation that students feel when faced with these challenges, we encourage students who are within a reasonable distance to meet physically for the virtual class meetings. Meeting with other students provides a support system and a sense of community. In our experience, students who have some computer skills help those who are newer to technology. Scaffolding and learning with and from each other is a natural and appropriate mode of learning in many indigenous cultures. (See sidebar "Virtual Class, Real Community")

Virtual Class, Real Community
An online course in the Marshall Islands

When students in the remote Pacific island of Majuro met weekly in one location for a virtual class, the meetings became more than just a time to interact with the instructor. For this course, students were asked to come together in one central location and participate in the web conference with the two instructors of the course (who were located 3,000 miles away in Hawaii). On Majuro, one computer was hooked to a

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projector, and all the students sat around a conference table to interact with the instructors, who logged in from their offices or homes in Hawaii.

A surprising and unintended outcome of these weekly meetings was that students stayed in the meeting room long after the virtual class session ended and worked together on their assignments (Rao 2008). Some of the younger students, who felt more proficient with computers, helped older students who had less computer experience. By meeting together, the students felt less nervous about technical issues that could come up during the virtual class. There was a sense of confidence that came from having several heads working together to solve problems. At the end of this eight-week online course, students noted that they enjoyed the sense of community, the sharing of food, and the joint discussions with the instructors and with one another. Although students could have logged into the virtual class from separate locations (their homes or classrooms), they found that meeting together enhanced the learning experience. Some students continued to meet informally in courses that followed, even when the instructor didn't require it.

Creating a Learning Community

Adult learners value connection and community in their learning. In many indigenous cultures, learning is not an individual activity; instead, information is shared and negotiated with others and passed down from elders to younger members of the community. They prefer to work collaboratively and value kinship and community over individual isolation (Facey 2001; George 1997; Zepke and Leach 2002). An online class in which instructors rely on asynchronous interactions challenges these students. For these online students, virtual class meetings are a vital part of creating connections, both with the instructor and with other students.

When students gather in one location to attend the virtual class, they become part of a physical community. They have informal discussions that help them feel less alone in the learning process. Students say this contact with others helps them continue when they otherwise are discouraged by the extra work of an online course.

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Instructors can use these virtual class meetings to create group activities that give students the opportunity to interact and collaborate. Just as small-group interactions provide opportunities for student-centered learning in a face-to-face class, small-group activities in a web-conferencing environment provide alternatives to lectures and allow students to work together and think critically.

If students can't meet together physically for the virtual class, web-conferencing tools enable students to be in online "breakout rooms" and do small-group interactions from different locations. These group activities can incorporate various perspectives, giving the space needed for students to bring their cultural backgrounds and knowledge to their work. (See "Teach Us")

Teach Us
Small-Group Activities for Virtual Classes

For an online class in the Marshall Islands, a regular feature of the weekly virtual class was the "Teach Us" activity (Rao 2008). The virtual class session started with an instructor lecturing about the week's topics. During the lecture, the whole group listened and interacted, asking questions and providing input when asked for feedback. After this lecture and discussion, the instructor asked students to break into groups of three or four and do the "Teach Us" activity. The instructor provided a set of questions from which groups could choose. The questions required critical thinking and synthesis of concepts. After a 15-minute small-group discussion, one member from each group reported on what the group had discussed. This created a dynamic environment during the virtual class, allowing the instructor and students to interact in a variety of instructional formats.

The Teach Us activities allowed students to bring their unique cultural and local perspectives to the class. The critical questions that the instructor posed for the Teach Us activity asked students to relate class content to their local settings. When students discussed the issues in their groups, they could bring in their individual perspectives and negotiate a group perspective. An added benefit was that the instructor could learn how the issues being discussed related to island cultures.

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> When students were interviewed about their experience in this class, most students mentioned enjoying the small-group format greatly. Some students appreciated the opportunity to learn from one another. Students who were younger and less experienced as teachers said the small-group activities allowed them to learn from older members of their group. Students also noted that going over concepts in small groups reinforced what they learned in class and that this clarity helped them when they did individual assignments. The small-group format became a way to build peer connections, to learn from and with each other, and to support individual learning.

Are We Virtually There?

Technology will continue to evolve and to provide more possibilities for communication, connection, and collaboration. Web-conferencing technology offers one kind of synchronous connection that allows us to design appropriate instruction for rural and remote learners.

Web conferences make it possible to engage students in meaningful and relevant ways from a distance. These Internet-based classrooms operate on very low bandwidth and remove much of the frustration of using technology at a distance. Synchronous teaching tools and strategies allow the creation of learning communities that result in student empowerment, connectedness, and growth.

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