Connected Education Communities

Minnesota State Colleges and Universities

Executive Summary

MINNESOTA STATE COLLEGES AND UNIVERSITIES

- **Industry:** Higher Education
- **Location:** State of Minnesota

CHALLENGE

- Provide distance learning resources to urban and rural college campuses statewide
- Increase access to educational programs for higher education and graduate students
- Connect academic leadership in real-time

SOLUTION

- Integrated immersive video with curriculum
- Created immersive classrooms to connect schools
- Developed blended learning courses to enhance learning

RESULTS

- Increased student opportunities and familiarity with technology
- Expanded course offerings
- Saved funds on the time and cost of travel

Challenge

A College and University System Looks to Reinvest

The Minnesota State Colleges and Universities System (MnSCU) serves 47 metropolitan and rural communities across the state, with a total of 31 public colleges and universities on 54 campuses. The system, which is the fifth-largest group of 2- and 4-year colleges and universities in the country (based on student enrollment), is committed to helping students meet their personal and career goals. One of the ways the system has been successful in this endeavor is by embracing technology that connects classrooms across the state.

With the furthest collegiate locations nearly 400 miles apart, connecting rural and metropolitan campuses requires Minnesota State Colleges and Universities leaders to collaborate in innovative ways, enabling real-time educational opportunities. Campuses throughout the state have been able to connect their students and faculty to provide classes, programs, and degrees; for example, Minnesota State University, Mankato (Minnesota State Mankato), in the south-central part of the state, has been able to connect with Itasca Community College and Hibbing Community College, both in the far northern regions of Minnesota, to provide degree programs in engineering and nursing. These programs fill industry needs within specific areas and provide job opportunities for local residents.

"There is so much growth potential for degrees in rural areas in Minnesota", says Jason Kaufman, a doctoral faculty member in Minnesota State Mankato's Department of Educational Leadership. "As instructors, part of our job is to identify ways that we can eliminate boundaries for students, and in Minnesota many of those boundaries are geographic."

Several years ago, leaders within MnSCU began evaluating how to efficiently and effectively collaborate. Encouraging cooperating became a core part of the system Charting the Future roadmap, which included many recommendations for breaking down silos and working together to better serve students and communities.

As a part of this larger call to expand programs and work better across the state, MnSCU needed to take connected learning to the next level, and its leaders knew that investing in technology was the right answer.

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"We are seeing more and more project-based learning happening within our program and beyond, and that type of application requires new ways of collaborating."

Jim Boyd, Technology Direction, Iron Range Engineering

One of the strongest advocates for using academic technologies to create connections across the state was Minnesota State Mankato President Richard Davenport. "We recognized early on that technology would create opportunities for us to share what we do here in Mankato with students across Minnesota, and we saw great potential in telepresence", says Davenport.

Convinced that technology would revolutionize access to education, Davenport made a commitment to invest in innovative infrastructure. That sentiment was echoed throughout the state's learning community.

"Our mission is to share instruction in meaningful ways", adds Ron Ulseth, a director and faculty member for Iron Range Engineering, a partnership between Minnesota State Mankato and Itasca Community College that is located on the campus of Mesabi Range Community and Technical College. "Much of our work lies in program development and understanding what we need to do as a community to share resources and make learning accessible for our students."

Connecting Rural Communities in New Ways

Academics have been writing at an increasing rate about the unique vitality of "cluster" networks. According to the Wall Street Journal, these clusters—the co-location and interconnection of related industries and schools—help increase competitive advantages. The benefit lies in the knowledge, relationships, and motivation of local communities, and the power they create together that distant rivals cannot match.

Many rural communities in Minnesota rely on their strong agricultural, technology, and manufacturing industries to power their local economy. And with more than 80 percent of MnSCU graduates remaining in the state to begin their careers, the system began to look more closely at using clustered networks to spread out learning and offer students in the state more opportunities, no matter how rural their location.

Because MnSCU already relied on education technology (about 93,300 students took online courses during the 2009–2010 academic year), its leaders decided to reinvest in its success in order to improve competitive advantages.

"Our state universities want to offer courses to our community colleges, and vice versa, in order to engage learners in remote areas based on their interests and skills", says Jim Boyd, Technology Director for Iron Range Engineering. "We are seeing more and more project-based learning happening within our program and beyond, and that type of application requires new ways of collaborating."

In order to more fully realize the power of clustered, distributed learning networks across Minnesota, MnSCU decided to strengthen an already successful area: immersive video.

"Knowledge transfer is absolutely critical within the Educational Leadership program", notes Kaufman. "Our topics are difficult to teach in a distributed way because they require so much interaction. We began to ask ourselves: How do we ensure sufficient graduate enrollment and meet the needs of students?"

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"When I saw an opportunity to create a high-quality immersive experience for students and faculty, I decided that it was beneficial to invest in a new kind of classroom that would promote engagement."

Ed Clark, Vice President for Technology and Chief Information Officer, Minnesota State Mankato

Evolving a Video Network

MnSCU made sure that its leadership came to an "all-in" approach. By subscribing to a shared vision and appointing leaders at different campuses, the system began to detail how its existing infrastructure could be enhanced to create a real-time video framework.

"When we began to more fully understand the power of video, we knew we had the potential to make several advancements", comments Carol Helland, the provost at Mesabi Range College (Mesabi). "Beyond instruction, we wanted to achieve new synergies."

Solution

Many associations, corporations, and global businesses use videoconferencing to increase the speed and quality of their services. However, although technology is taking a stronger foothold in the academic world, video is not always embraced, especially in rural areas.

"Throughout my career, the vast majority of classes I've taught have been traditional, with face-to-face instruction in one room", says Steve Johnson, an assistant professor in Minnesota State Mankato's Master of Accounting Program. "When you have a limited number of students who want to take a certain course and you need to make sure you're increasing the exposure of your master's program, the efficient use of resources is critical for success."

For MnSCU, integrated high-definition video promised to grant variety, cost savings, and new types of education. However, the frequency and flexibility of collaboration across video were also important considerations when evaluating solutions.

Relying on the Community

One of the most important considerations for MnSCU leaders was to work with a technology partner that had a considerable and well-tested footprint in Minnesota.

"Many of the departments within our system are spread across vast locations; for example, the Educational Leadership program has half of its resources in Edina and the other half in Mankato, which are more than an hour apart", notes Kaufman. "If one professor was scheduled to teach in Edina and the weather was inclement, we would need to make sure that our technology was proven and reliable."

Beginning in 2012, leaders from the system, including Candace Raskin, department chair of the Educational Leadership program at Minnesota State Mankato, came together to form goals based on their technology needs. Many questions were introduced based on communications, comfort, quality, and overall capabilities. In general, they all needed to compare a new video teleconferencing system to both their old video program and a traditional face-to-face course.

"An important part of the evaluation process was the sense of community", says Raskin. "We wanted to make sure that we enhanced our roles and what we offered our students, and that the technology was a catalyst to creating a better statewide community."

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Finding the Right Technology

In order to create a networked learning cluster, many of the leaders within the college system traveled to evaluate other learning networks in action. The common thread among these smaller clusters was the Cisco TelePresence® system, a real-time, immersive collaboration video system that promotes natural interactions.

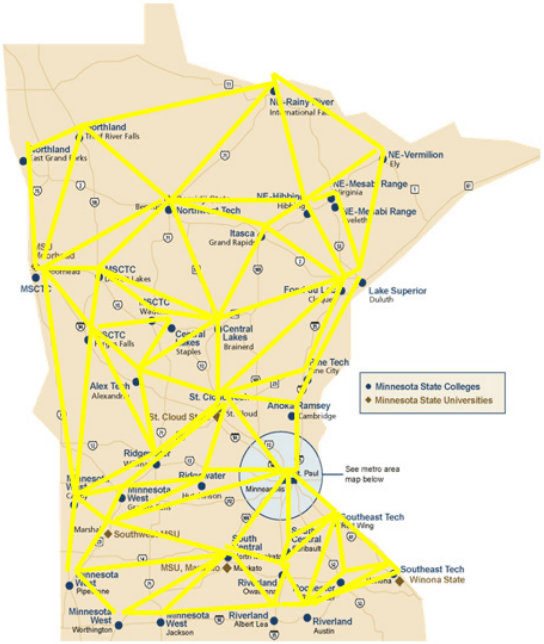
"When we traveled to experience other telepresence classes, we not only evaluated what we saw, but we interacted with sites across the United States", says Helland. "We were blown away—it felt like the people in Indiana were in the same room, and compared to our old systems, it was a completely different experience."

To reinvent teaching, learning, and its education delivery system, MnSCU looked closely at the ways that telepresence could consolidate disparate learning centers, and connect them to form a more tightly controlled learning infrastructure.

"We are a part of the Itasca Area Schools Collaborative, and our strong need to provide course offerings to rural communities increased our interest in bolstering this statewide video network", notes Bart Johnson, Dean of Academics at Itasca Community College (ICC). "Along with my colleagues, I traveled to California and Wisconsin to evaluate platforms; it was an easy decision to move forward with telepresence."

While evaluating telepresence, the research team also considered the introduction and promotion of the technology on each campus. At Minnesota State Mankato, the Information and Technology Services staff knew it had to dedicate time and divisional resources to purchase, install, and maintain new systems.

Ed Clark, Vice President for Technology and Chief Information Officer at Minnesota State Mankato, considered careful planning and financial adjustments as an investment in the success of the university and its partners.



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"With telepresence we can expand the size of our classes without watering down content, and we are able to connect naturally."

Charles Sparks, Student, Minnesota State Mankato

"There was a commonly held opinion that previous forms of videoconferencing were adequate to meet classroom needs; however, most of our video rooms were languishing because of a lack of enthusiasm", says Clark. "When I saw an opportunity to create a high-quality immersive experience for students and faculty, I decided that it was beneficial to invest in a new kind of classroom that would promote engagement."

Creating a New Type of Community

For MnSCU, the benefits of a larger, statewide connected community extended far beyond higher education. The opportunity of collaborating with K–12 schools also opened a new point of access for the college system and strengthened interest in investing in integrated high-definition video across the state.

"Our priority right now is to increase sharing, and to do so with technology that's better than our previous solution", comments Elena Favela, Dean of the College at Rainy River Community College (International Falls), known as Rainy River. "We want our students to have access to courses they might not otherwise have, and that includes taking advantage of all that we can through K–12 schools, 2-year colleges, and 4-year university partnerships."

While evaluating Cisco TelePresence conferencing, MnSCU leaders spoke with Cisco about the company's Connected Education Community (CEC) initiative, which helps schools design, implement, and use technology networks that break down boundaries.

With an emphasis on the future, the CEC initiative emphasizes establishing positive and transformative cultures within user communities and using a common vocabulary. In Minnesota, this initiative is working to connect 14 K–12 units, 21 two-year units, and 5 units in 4-year universities. By fusing these thirty-one 18-seat telepresence units together in a clustered network, Cisco saw a huge opportunity to meet MnSCU's needs.

Integration and Transition

When MnSCU made the decision to move forward with Cisco TelePresence deployments by taking advantage of the Cisco® CEC initiative, several schools offered to test, evaluate, and report on their experience with immersive video.

"We were some of the first people who evaluated Cisco TelePresence systems in action to facilitate instruction", says Helland. "About 25 percent of our classes are online, and we felt we were a natural fit to engage immediately, since one of our goals is to reach a larger user community."

During the evaluation phase, faculty worked to rethink the delivery of their courses. By interacting with a new medium, instructors became more inventive and brought in new types of learning materials and visuals to interact with a growing student body.

In many ways, the testing of telepresence underscored the importance of active learning: students today are digital natives who are born into a world framed by technology; they not only demand digital learning experiences, but expect them. These learners take an active role in their education and want to control it anytime, anywhere.

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"Video has proven to be a great opportunity to reach farther than what we believed our immediate capabilities to be."

Carol Helland, Provost, Mesabi Range College

"When we jumped into online learning more than 10 years ago, we thought a lot about the growth of active learning, and those parallels still exist today", says Helland. "Faculty have the same concerns now that they had a decade ago, but the technology has changed to address those concerns in a more effective and innovative way."

Benefits and Results

Changing Education for the Better

In terms of student opportunities and experiences, incorporating high-definition, lifelike video has been overwhelmingly positive. From fostering group learning to enabling rural communities to access new courses, the new connected community that has formed is exceeding expectations.

"Once we knew we were moving full speed ahead, we began to emphasize collaboration more and more", notes Dr. Johnson. "We're removing distance barriers, and the technology is transparent–it's as if it's not even there."

Many of the students new to immersive video had an overall sense of unease. However, when classes began, adjusting to distance learning was not as challenging as expected.

"I'm enrolled in a fraud examination course within the Master of Accounting Program, which teaches financial education", says Charles Sparks, a student at Minnesota State Mankato. "With telepresence we can expand the size of our classes without watering down content, and we are able to connect naturally. Using this technology is also extremely important in the professional world, and knowing how to use it gives us an edge in the future."

Getting Creative with Instruction

For teachers, using video encourages creativity. Although some instructional topics are fairly straightforward, many programs were not developed to be taught in a distributed way. The advent of telepresence allows teachers to use new ways of interacting and enhance their communications skills.

"Video has proven to be a great opportunity to reach farther than what we believed our immediate capabilities to be", remarks Helland. "We have delivered physics courses to Itasca Community College, we've signed a course distribution agreement with Inver Hills Community College, and we've held multiple board meetings over Cisco TelePresence systems to make new course offerings happen."

Instructors teaching with telepresence have come to rely on each other for knowledge transfer and the enhancement of both traditional and new courses. Because working with video requires more collaboration, instructors are meeting more frequently and using these work sessions to discuss innovation.

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"Having leaders who are willing to experiment and invest in education technology has facilitated incredible synergies."

Jason Kaufman, Doctoral Faculty Member, Department of Educational Leadership

In terms of faculty and program development, many instructors are noticing that immersive video is making a meaningful impact in previously unconsidered areas. With video-led courses, many instructors view their classes as learning conversations, not traditional lectures. These learning conversations involve in-depth discussion about the material that is being taught and processed.

"We're flipping our model of education delivery so that more problem solving takes place in a peer-to-peer environment, which telepresence executes flawlessly", notes Ulseth. "Before we couldn't see the faces of our distance learners, and students had a difficult time posing questions. Now we have a system that is reliable and real-time."

A Rapid Expansion of Course Offerings

For small, rural schools, the challenges of limited course offerings can make or break the ability for a school to retain students and become competitive. Many of the K–12 schools in these remote areas of Minnesota also rely on community college offerings to keep students engaged and interested in continuing their education.

"We have such a strong need for rural communities to provide course offerings", says Johnson. "Many of our partner institutions are in the same position, but with telepresence, we can have one instructor deliver content to other locations, offer a wide variety of courses, and offset costs at the same time."

Relying on video, ICC is now offering general associates of arts courses that fit busy student schedules. It is also working closely with Rainy River to expand student access to nursing programs. This field of study is very important when it comes to urgent care in remote locations, and many rural communities depend on students with nursing degrees to find work in their local communities.

"The Practical Nursing program that we share with ICC provides carefully selected instruction and clinical practice experiences", notes Favela. "Telepresence helps with instructional costs, and these courses enable students to learn to meet the basic needs of patients and function as practical nurses."

In addition, Minnesota State Mankato offers courses that are rooted in research methods—topics that are difficult to teach in a fragmented way because they require a lot of real-time collaboration. When offering these courses, the university needs to ensure sufficient graduate enrollment and meet the needs of students at the same time.

"Telepresence is now an integral part of the research method and doctoral coursework within the Educational Leadership program", notes Kaufman. "All of our doctoral courses are now taught over video, and we can split our responsibilities between campuses. This new paradigm has been a major change and improvement."

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Today, Minnesota State Mankato has students from all over the state of Minnesota taking classes over Cisco TelePresence systems and is working with educational partners in China using the new, highly enhanced video technology.

Connecting to Form a True Statewide Learning Network

Building a strong community to support new types of education technology is based heavily on student reception, which helps to shape the longevity of academic programs. The faculty and students who used Cisco TelePresence conferencing during the 2013 fall semester took risks, got innovative, and were willing to put in the time and effort to ensure wide adoption.

These characteristics and the foundational pillars they created are what made Minnesota's CEC happen.

"Even before you start a class in a Cisco TelePresence room you have to have the right people in place to make change happen", says Helland. "We have been very fortunate to have such a strong user community at Minnesota State Colleges and Universities, and thanks to those players, we've been able to launch the video network over the course of a single semester."

Collaboration between schools has led many of MnSCU's programs to make breakthroughs, as well as save considerably on time and travel costs.

"We have entrepreneurial projects that our community is leading and our students are working on, as a result of immersive video", says Boyd. "Our community members have great ideas, and with this technology it's now feasible to put those ideas into action and brainstorm. We've had several patents come out of our institutions that we can link back to collaborative education technology."

Next Steps

Nearly every school within MnSCU is looking for ways to expand video use and offer more programming. For low-enrollment courses, adopting telepresence meets student needs across the state, no matter the demand, and keeps professors employed while minimizing spending.

"Because of this new network, in the fall of 2014 we will be sharing a program between Mesabi and ICC for the first time", says Ulseth. "We will use telepresence to deliver new coursework to both campuses in Grand Rapids and Virginia, so more engineering instruction will begin to take place across the state between more rural communities."

Leaders within the Master of Accounting program are designing new types of teaching stations to become even more integrated with technology. And the Educational Leadership program is investing more in its pedagogy as a result of using video.

"Having leaders who are willing to experiment and invest in education technology has facilitated incredible synergies", notes Kaufman. "It's now a part of our students' day-to-day experience, and every day we're becoming more adept."

For many schools, adopting immersive video creates new goals and a new approach to education technology. The questions that are arising as a result of the initial Cisco TelePresence deployment are promoting creativity into the future and strengthening the connections between schools across the state.

"Our chancellor's vision is to make Minnesota State Colleges and Universities a model for distance education, and that's anchored by our Cisco TelePresence system," says Helland. "Each school within this initiative is extending boundaries beyond higher education and allowing students to start as freshmen, procure specialized skills, and contribute to our state's economy."

Rainy River is looking forward to creating more advisory groups comprising industry leaders, such as the industrial maintenance, welding, and millwright trades. Using collaboration technology to connect, the college hopes that these groups will help shape the curriculum, eventually leading to industry leaders hiring more Rainy River students.

"What's happening with our universities, departments, and Cisco is a demonstration of what good can come when leaders work together and get innovative with the same goals", remarks Kaufman. "We're only now beginning to see where we can go."

