PROFILE

Name: California State University, Fresno
Location: Fresno, California
Type: University

CHALLENGE

Collaborative learning studios can be costly due to the varying needed forms of technology and equipment.

SOLUTION

Epson's BrightLink® Projector allows for student collaboration and delivers a multi-functional, powerful learning environment that reduces the overall costs of creating a learning studio.

Active Learning

Epson BrightLink Technology Key to Student-Centered Instruction at Fresno State

"What we are doing today, as educators, is totally different from we've done before, and it needs to be," says Otto Benavides, Associate Emeritus Professor and Director of the Instructional Technology and Resource Center at California State University Fresno.

Benavides has spent more than 30 years in teacher education and in classroom design. While at one time, he says, the point of classroom technology was to enhance traditional teaching methods, today it can best be used to help instructors shift to a "student-centered" focus. "By providing this kind of environment," he says, "we are empowering our students to learn."

"Information today is everywhere around us. Students need to learn how to find it, evaluate it, and manage it. The best thing I can do, as an instructor, is to give them problems to research, then help them to see what's valuable in what they've found and understand how to use it."

His latest high-tech classroom design, which utilizes Epson BrightLink projectors, significantly improves upon the collaborative classrooms, or "learning studios," being installed in a large number of universities across the country. As important, it makes learning studios much more practical for other institutions, including community colleges and high schools.

The Learning Studio Concept

Classrooms like the ones Benavides has created encourage highly creative, active teaching and learning methods. In a

learning studio, students work in groups, learning by solving relevant problems together. These rooms include Internet access to encourage individual research, but also include group displays and whiteboards, so students can share and synthesize what they learn.

Because the displays are networked, students can present to the entire class, showing the same image on all screens. The instructor typically circulates through the room during group projects, stopping to check on progress and to answer questions while students work. Research indicates the collaboration and interactivity that take place in these rooms, and the opportunity students gain to teach one another what they learn, significantly enhance understanding and retention.

> ***"Now our students could move around, go to the board, talk about the project they are working on and actually make changes to it, because the BrightLink acts as a giant touch-screen computer, it is really fantastic."***
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> – OTTO BENAVIDES, ASSOCIATE EMERITUS PROFESSOR AND DIRECTOR OF THE INSTRUCTIONAL TECHNOLOGY AND RESOURCE CENTER AT CALIFORNIA STATE UNIVERSITY FRESNO

Still, Benavides believes the basic learning studio design can be improved. He has addressed three important issues.

The first is the limitations of traditional teaching tools. For example, whiteboards are very helpful in a collaborative setting, in that they allow students to create notes and drawings and work together while standing, which research indicates can promote group learning. Yet it's hard to save those notes or present them to the whole class. Flat panel displays also have their downsides. The main one is that there's no good way to use them in conjunction with the whiteboards. Groups can view the displays and talk about what they see, but the interaction is limited.

The second issue is that learning studios can be very expensive. While these rooms will almost certainly include an IP network, most classroom designers will add a media network with a matrix switcher so everyone can see each other's' work. That extra setup can add tens of thousands of dollars to the classroom's cost. Can we not eliminate it and do everything on the IP network?

Finally the third, typically file sharing can be problematic. In most learning studios, students use email or third-party file sharing solutions to share the individual files they have researched or created. When they are working on a group document, they must take turns with the keyboard or assign one member as the note taker. There's no shared platform devoted to collaboration.

Benavides finds a solution by including an Epson BrightLink projector for each student group. It acts as a digital whiteboard and a large screen display, as it combines a short-throw projector, a wall-mounted whiteboard and the electronics of a touch screen display. Students can use it to view computer images, but also mark up those images, write notes, or, using an onscreen keyboard and their fingers as the mouse, create or revise a document while standing at the board, then save and share their work with the group.

"Now our students could move around, go to the board, talk about the project they are working on and actually make changes to it, because the BrightLink acts as a giant touch-screen computer," Benavides explains. "It is really fantastic."

A Step Beyond

When the School of Education at Fresno State made the decision to build its first learning studio in 2012, Benavides felt he could overcome each of these drawbacks.

For his first studio, designed with the help of James Gulke of High-Tech Electric in Fresno, Benavides replaced both the group displays and large writing surfaces with BrightLink 485wi interactive projectors from Epson, used in conjunction with standard, 80" diagonal whiteboards.

Any of the students could connect to a group's BrightLink via Apple TV® and the room's Wi-Fi® network, projecting the image from their laptop so everyone could see. Better still, they could stand at the digital whiteboard and manipulate the image or document using a digital pen as a mouse, or even bring up an on-screen keyboard, much as they would with an iPad or other tablet.

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During those times when they only needed a whiteboard, they could also use the BrightLink without a computer, writing notes but capturing them as well for later use.

In 2015, Benavides' team built two more learning studios, this time with Epson's new BrightLink Pro 1430wi. These interactive projectors have improved brightness, greater connectivity, and they allow students to write or draw with their fingers, instead of a digital pen. "That's a great improvement," he says.

> ***His latest setup, using the BrightLink Pro and Mac mini, is very powerful and flexible, yet inexpensive enough to be used with almost any subject matter at any level, even in elementary schools and high schools.***

The two took the design one more step: they added a Mac® mini to each group to expedite file sharing. Instead of interacting with individual student computers, the BrightLink Pro is permanently assigned to this miniature Apple computer. Students can send files to the Mac mini from each of their laptops, then either take over the mini from their laptops or from the BrightLink Pro.

"Let's say a science teacher asks a group to create a document on a particular species," Benavides explains. "One student can research habitat, another physical characteristics, and another how that animal interacts with other species. Next they can integrate the work they've done right on the screen, while sharing what they've learned with each other."

The various groups' Mac minis also connect to each other over the classroom network. Not only does that eliminate the need for an expensive matrix switcher, but it makes it easy for any student to contribute to a classroom-wide project, either from his or her own laptop or from any BrightLink Pro.

Modeling the Use of Technology

For Benavides, the use of the new learning studios is more than a means of teaching subject matter: it's a way of showing student teachers in their undergraduate programs and experienced teachers and administrators in grad school how best to use various kinds of classroom technology.

His latest setup, using the BrightLink Pro and Mac mini, is very powerful and flexible, yet inexpensive enough to be used with almost any subject matter at any level, even in elementary schools and high schools.

"We recently had a special education teacher, who is working on a Master's Degree, bring her assistant superintendent to class with her," Benavides says. "Afterwards, he came up to ask me some questions, among them, 'How do I get a classroom like this into one of our schools?' So I explained what we did – how to use the Mac Minis and the BrightLink Pros, and how affordable they are. Now he's going to build a learning studio of his own."

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