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higher education

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Western Michigan University

College of Engineering and
Applied Sciences
Student Innovation & Design Center

Kalamazoo, MI

Credits:
Custer Workplace Interiors

As colleges add more collaborative work and team projects to their curriculums, they often struggle to provide the kind of dedicated, high performance group spaces that students need to truly excel at group work. Western Michigan University (WMU) created a collaborative space that student teams give top marks.

The college's new Student Innovation & Design Center (SIDC), the brainchild of Richard B. Hathaway, Ph.D., professor of Mechanical and Aeronautical Engineering at the University, opened in February 2009. The 28' X 40' room features five different team areas equipped with the tools every student team craves: high-powered computers, flexible furniture, dedicated team storage, and content creation and capture tools. Just as important as the tools is co-location: the SIDC gives students easy access to other team members for problem solving and inspiration, and provides an ideal place to meet with instructors and mentors.

Before the SIDC opened, WMU engineering seniors worked the way most college teams work: in libraries, lounges, and other communal areas less than ideal for collaborative work. "They're relatively noisy, you tend to get bombarded with other individuals walking by, they see you there, they'll come up and ask you about other things," says Neal Sheldon, senior engineering student. "Whereas when you're able to work in [the SIDC], you could shut the door behind you, and it gave you kind of a silent, nice workspace to get a lot of our work done."

Businesses are demanding that colleges better prepare students for the real world, and Hathaway saw a dedicated team space as a key to that preparation. "Senior projects are a major part of our education here, the culminating part of their education, yet we didn't have any focus for them, nor any visibility for them when we had potential future students come in," says Hathaway. "Plus, the projects get more and more complex, more industry-oriented, and students needed spaces where they could do their heavy computational work, meet as a team, convene with mentors, and advance the projects in a way that replicates industry. At my kitchen table one morning, I drafted up the concept of a dedicated space where these things could occur, where there would be collaboration between teams and amongst the members of the teams."

Student teams have dedicated teamspace, furniture and tools to support year-long projects.

Hathaway worked with the department chair, Parviz Merati, Ph.D., and Timothy J. Greene, then dean of the school, now provost/VP of academic affairs. Greene engaged two groups in the development of the SIDC: Custer Workplace Interiors, and WMU students. "The students are the end users, and to not include them in the

process I think would have been unwise on our part," notes Hathaway. "They know better than anyone what they need."

Mechanical engineering major Sara Arendall was part of the development team. "We talked about a lot of things, the walls being sound deadening, for example. Do we want two monitors in here? Do we want the furniture to be moveable? There was a lot of discussion throughout the design process."

SIDC furniture is mobile, not locked down. Student ID cards open the front door, and there's not a computer security cable in site. "We've never lost anything because the students know it's their space and they have to take care of it."

Richard Hathaway
Professor of Mechanical & Aeronautical Engineering

Goals for the SIDC centered on collaborative work and multitasking:

- help students to better engage with faculty and advisors
- provide areas for building and prototyping projects
- support multiple activities in the space
- support teams ranging from two to five people
- provide dedicated team storage and a small reference library

Custer designer Jane Minich helped balance the goals with the realities of an existing room. "We couldn't change much about mechanicals and lighting. The students needed a lot of technology support, and furniture they could easily move and reconfigure. We also needed finishes to match the existing building finishes, and the whole project had a tight budget."

The product solution leverages flexible furniture and tools:

- Answer systems furniture provides technology support and space division that balances privacy with access to others. Perforated skins on lower parts of panels help with air flow, and glazed upper panels help provide even light throughout the center. High performance acoustical panels help keep noise under control.
- Ultra-light, portable Huddleboard white boards in each team space support group content development and review.
- A wall-mounted CopyCam Image Capturing System saves images to the internal archive or to a USB port or printer.
- Storage in team spaces is provided by Universal vertical files and pedestals.
- Details work tools hang on Slatwall to provide vertical storage and move tools off the worksurface so teams have more work area.
- Mobile tables can be used individually or grouped into larger worksurfaces.
- Protégé multi-use chairs support students for long stretches at the computer or in a group work session.

As soon as the doors opened, the SIDC was humming with students. Professor Hathaway recorded 156 student-hours in just five days (including a weekend), for an average of 31 student hours per day. Usage grew from there. Students have an ideal place not only for group work, but also for meetings with instructors and business mentors. "We had a place to kind of set up a corporate conference room, and it was really helpful to just have a place to sit down. It was a clean, crisp space to use, and really, really helpful throughout the entire process," says Sheldon.

"You'd walk by and see an industrial mentor in here with the team members sharing on the white boards. That was a pleasant surprise," says Hathaway. "Another thing that I had not anticipated: the faculty really enjoy coming down here and working directly with the students, they have all the computers surrounding them, they can share what they're doing, what their hang-ups are, how they're advancing the design. I had anticipated some of it, but really the intensity of that was much, much greater."

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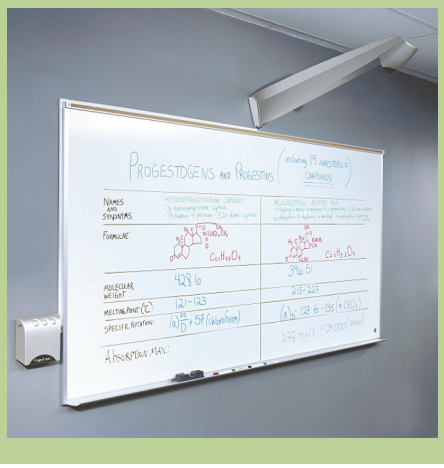
A wall-mounted CopyCam Image Capturing System saves images to the internal archive or to a USB port or printer.



Most new spaces evolve if they're allowed to, and the SIDC did so quickly. "We got to a point," says Hathaway, "probably within three weeks, the utilization was so high – I had to put in an order for four more computers in this room so that the teams could work even more efficiently. Because we originally saw this as primarily computational work... but then they found that it was such a neat meeting space that they could advance the report and their presentations and everything else, so we had

Student reaction to the SIDC:

"I feel that basically our design optimization quadrupled in production because of the fact that we could sit here at 4 AM, if need be, and work specifically on iterative designs without having to worry about the computer lab closing at midnight."
– Chad Kroll

"It worked great for me... if I wasn't working on senior design project, I was spending my time working on different homework assignments. It was nice for me to be able to sit there, and when they had questions, I could just push my laptop aside and (work with them)."
– Ben Frudzinski

"I think in the last two months, we've done, probably 75% of our overall project. And it really happened when this room opened up. Because then we weren't limited by what the school told us we could do, it was... how much can you get done in one day? So, you could maintain your priorities and still get all of your work done."
– Ryan Pringle

"It's nice to have other groups (around)... a lot of the questions I had I could just yell over the wall, 'Hey! Can I ask you a question real quick?' A lot of the groups were like that... it's nice to have people that are doing the same kind of thing."
– Sara Arendall

"We wouldn't have been able to get this project done and done as well as we did, if this [center] wasn't available to us."
– Brian Doorlag

to add that secondary computer to each room. That was a pleasant surprise, even though we don't like spending money!"

The SIDC attracted notice from other schools at the University; instructors asked to use the space for their departments. "It's probably one of the most highly utilized rooms in the college," says Hathaway. "The other departments are looking at this as something that they really need, because it brings attention to the serious nature of these projects, the expectations we have in their whole senior project experience. I think we're going to see that we have to add more and that's going to be based on student demand."

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Department chair and professor Parviz Merati put the student success in SIDC in a larger perspective. "We need innovation as a country, and as an economy. That's why we're focusing in our department on innovation. We're giving students the tools, the instruction, a place like the Student Innovation and Design Center, and helping them learn the skills necessary to be innovative."

WMU is already seeing a boost in student innovation. Currently, four design patents are in process for work done by undergraduate engineering students.

"The SIDC is not a huge space, but it's very effective," says Custer. "It's the kind of space that's easily replicated. Probably every department at a university has a need for a space that includes the kinds of concepts used in the SIDC."

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