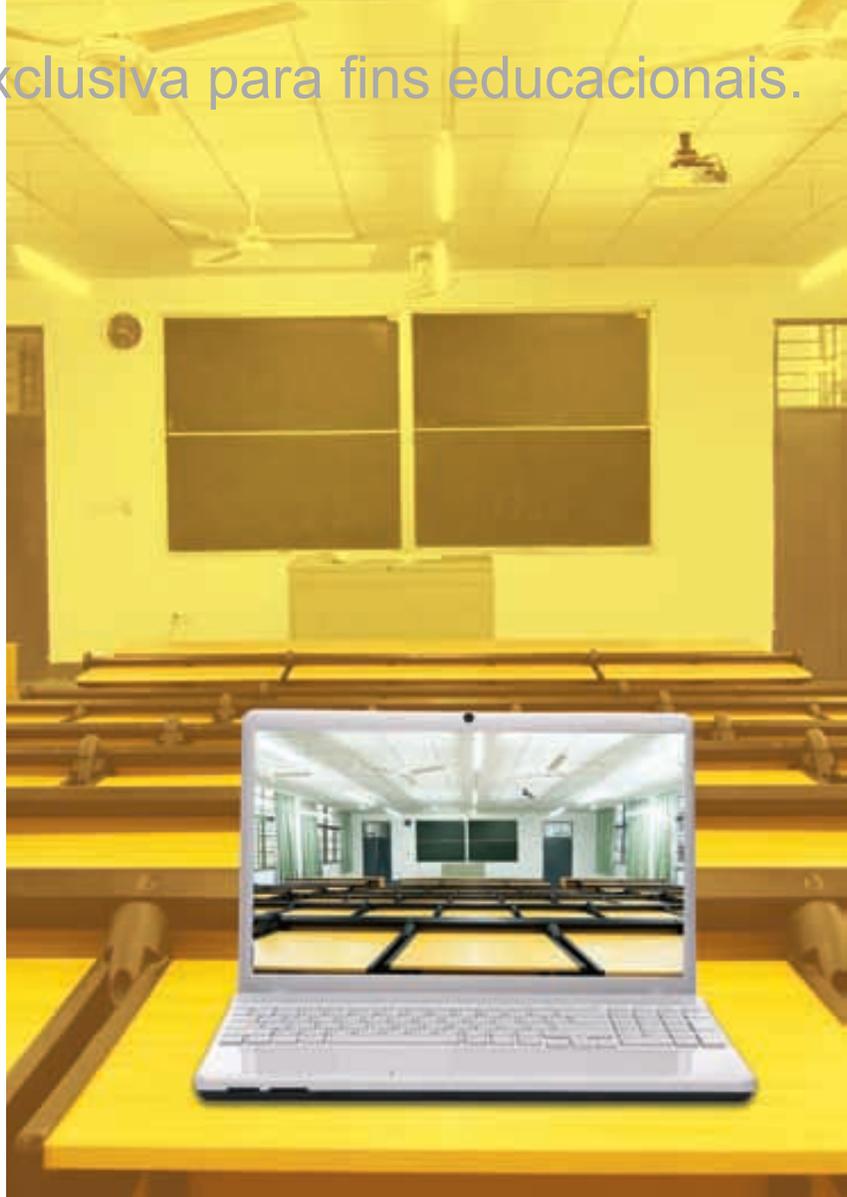


# the cyber classroom

*A mashup of lecture and distance learning improves student performance.*

by **Michael Bianchi**



**I**n many circles, distance learning is seen as an alternative to classroom instruction. Distance learning certainly addresses some of the limitations of classroom instruction, particularly the barriers of “at this time and in this place.” Distance learning can eliminate one or both, but not without its own costs.

In this article we will look at an ongoing effort at The University of Michigan–Flint to use distance learning to augment classroom instruction, and vice versa, in a room it calls the Cyber Classroom. Using video, audio, and lecture capture technology, presentations given in that room are automatically turned into recorded distance learning programs and are made available to all of the students on a multimedia website.

We’ll see that students’ situations and learning styles vary and that having both classroom instruction and distance learning resources available to all students enrolled in a course improves their understanding of the course material. This is demonstrated by the students’ final grades.

## **The Cyber Classroom Technology**

The Computer Science, Engineering and Physics (CSEP) Department of The University of Michigan–Flint started making video recordings of lectures in 2007. They use Foveal Systems, LLC’s AutoAuditorium System as a front end to Sonic Foundry, Inc.’s Mediasite to capture class sessions for their students.

Each recording is automatically composed of shots of any projected material. It is combined with a tracking camera shot of the professor walking around the front of the room and an occasional shot from the back of the room. The AutoAuditorium System does the shot selection and composition while operating the tracking camera, changing pan, tilt, and zoom settings as appropriate. If there is more than one person moving “on stage,” the tracking camera zooms out to film all of them. If there is only one person walking and gesturing, it zooms in enough to keep the person in the frame. Someone calmly standing in one place results in a head-and-shoulders shot.

The audio comes from the professor's wireless microphone. Additionally, there are microphones mounted on the ceiling over the presentation area and the student seating area. These are automatically mixed together so that those watching the recordings can hear almost everything said in the room. The ceiling microphones over the presentation area also act as a backup against a dead battery in the wireless microphone, because their audio is still good enough to provide continuous coverage. The room is small enough that everyone can hear without using the audio mix sound reinforcement in the room.

The Mediasite recorder captures, encodes, and synchronizes the video, audio, and projector feeds into a recorded presentation. Simple controls allow the professor to label, start, pause, and end the recording of each class. The recording is available on the Mediasite server's Cyber Classroom catalog 10 minutes after class ends.

Because each set of recordings is addressed to a particular section of a particular course offering, the recordings are removed from the catalog after final exams.

## The Cyber Classroom Student Experience

All of the students signed up for a course given in the Cyber Classroom have access to the lectures as both in-person classroom instruction and distance learning recordings. Students don't have to choose in advance between one or the other. Instead, they are free to use both in any way that works for them. For a school with a large proportion of adult learners who live off campus, are employed, and/or have families, this arrangement provides those students with a great deal of flexibility.

Their stories reflect their diversity in learning styles and instruction preference, from purely classroom to purely distance.

One student swore he never watched the videos, "except this one time I didn't understand something. I don't know how many times I replayed that one section of that one recording, but I finally understood the concept."

Others would watch portions of almost every recording, ranging from a couple of short segments where they didn't quite understand something to much longer sections to review before exams.

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A few students came to class and watched the recordings in their entirety. One instructor tells of a student whose English was not very strong: “He came to every class, and then watched the recording with a friend who would translate and explain. In the end his English was much improved and he did well in the course.”

A disabled student who could not take notes in class also watched the recordings in the dorm.

Then there was a student who thought he could sleep late and just watch the video “but then discovered that he really wanted to ask questions and so started attending in person.”

Another student who found that sometimes the material was going by too fast watched the recordings and made liberal use of the Pause button.

There are also cases where a business trip, weather, or other event keeps a student from attending class. “I see the class I missed, with the same professor with the same body language and emphasis I’m used to, and the same students asking the same sorts of questions they always ask.”

And there were a few who did not attend class at all because of work conflicts. For them, the Cyber Classroom provided pure distance learning.

## Measuring the Effectiveness of Cyber Classroom Instruction

In 2008, Stephen Turner and Michael E. Farmer, both Cyber Classroom instructors, realized that they had a rare opportunity to make direct comparisons of student outcomes both with and without the Cyber Classroom recordings. Three professors who had taught the same courses for a number of years were now in the Cyber Classroom. Turner and Farmer compared 176 past students who attended 448 lectures against 173 students attending and/or watching 308 Cyber Classroom lectures. In their paper “Assessment of Student Performance in an Internet-Based Multimedia Classroom” ([www.autoauditorium.com/PressRelease/FECS08\\_StudentPerformance.pdf](http://www.autoauditorium.com/PressRelease/FECS08_StudentPerformance.pdf)), they reported these comparisons of the final grades:

- The average of all grades went up nearly half a grade point, approximately C+ to B-.
- The standard deviation of the grades improved by going down by about 10%.
- 36% more students received honor grades, B+ and above.
- 56% fewer students failed.

“The significant drop in failing grades can directly be attributed to the integrated blending of on-line

and in-class formats through the cyber classroom, since most failures in our students can be attributed to the students ‘vanishing’ for extended periods of the semester due to external problems and commitments. The cyber classroom allows these students to remain connected and participating in the class despite their sudden inability to come to class thus validating the concept of integrating online and distance learning for maximum flexibility in student participation.”

## The Administrative Viewpoint on the Cyber Classroom

Chris Pearson is the department chair of CSEP.

“All our graduate courses and many undergraduate courses are given in our Cyber Classroom,” Pearson says. “It is booked from 8 a.m. until 9 p.m. on the four days a week we offer instruction. We make 22 recordings each week.

“Since our removing the distinction between online and in-class instruction is primarily student-centered, we concluded that we needed a second room. Our decision was to just clone the first. We did not see the need to consider alternatives.”

Their second Cyber Classroom was installed in the fall of 2010.

## Conclusions

The Cyber Classroom is now an established fact of the CSEP master’s degrees at the University of Michigan–Flint. All of those courses are taught in the Cyber Classrooms, and all of the current master’s degree students have had all their classes in those rooms. It is no longer possible to do a before-and-after comparison in this program.

We can say that the blending of traditional classroom instruction with distance learning technology can have a range of benefits for a variety of students. We can also expect that, in the future, the attributes currently thought of as “cyber” in a classroom setting will simply become “the classroom.”

*[Note: Streaming Media publishes vendor-submitted case studies such as this one based solely upon our assessment of their value to our readers.]*

bio

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**Fonte: Streaming Media, v. 8, n. 1, p. 128-130, 2011. [Base de Dados]. Disponível em: <<http://web.ebscohost.com>>. Acesso em: 24 fev. 2011.**