Students learn calculus in video classroom

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PLAQUEMINE -- Plaquemine and Baker high schools may be separated by the Mississippi River, but students at each school spend an hour together every morning thanks to interactive video-conferencing technology.

The students are taking part in the second year of a pilot project to offer advanced placement calculus classes -- through televisions, cable modems, video cameras and microphones -- to students across the state.

Last year, the class was only offered at Baker High School. This year, the course is offered at five other schools: Plaquemine High, Walker High, Slidell High and, in Baton Rouge, Istrouma and Scotlandville high schools.

On the morning of Sept. 1, five students at Plaquemine High School left their first period classes 15 minutes early to gather in a small classroom anchored by a big screen television and a video camera.

At the same time, four students almost 30 miles away in Baker walked into their math class for second hour. Baker High has a different bell schedule, so Plaquemine High had to adjust its students' schedules to accommodate the class.

Teacher Kevin Zito, an LSU doctoral student and certified math teacher, was already waiting for the students at his post in the Claiborne Building in downtown Baton Rouge when the students settled in Sept. 1.

The camera switched focus between Zito and the students as they talked or solved equations.

Zito’s work was transmitted and enlarged on the television screen in both classrooms using a Canon RE-350 Video Visualizer, commonly known as an "Elmo." Once he worked to the end of the problem, he posed a question to the students: "Is this a solution?"

"No," said senior Earledreka White quietly to herself.

"I heard a 'no.' It sounded like it came from Plaquemine. Why is that not a solution?" Zito asked.
"Because it's not a point," White answered.

Plaquemine students said they like the class because it is interactive and because their math teacher for the past two years, Cherie Blanchard, is the facilitator.

"It would be different if it's recorded," senior Ashlyn Oubre said. "Because it's live, it's pretty much the same (as a live classroom teacher)."

The purpose of the program is to develop strategies to improve math education in Louisiana public high schools, said Frank Neubrander, the LSU professor who spearheaded the project.

LSU launched the program last year through a grant from the state Board of Regents and a partnership with the Louisiana Resource Center for Educators and Baker High School.

This year, Southern University and the five other high schools joined the effort. Southern will offer its education and math students as tutors at the high schools, and Joseph Meyinsse, chairman of Southern's math department, is taking a leading role administering the program.

"Our requirements are different from LSU," Meyinsse said, "but we need each other to prepare our incoming students better."

Louisiana universities want to help improve high school math courses because they don't have enough students majoring in math-intensive programs.

For example, only 430 of 160,000 undergraduate students in Louisiana major in math, Neubrander said. Nationally, math majors make up about 1.2 percent of all undergraduate majors. To match that average, Louisiana colleges should have 1,929 math majors.

"What can we do to change this picture?" Neubrander asked. "We can help out the high schools to implement a better math program for their college-bound students. Ideally, we should start with kindergarten and build at each grade, and, hopefully, we shall. But at the present time, we are putting our energy where we think it will make the biggest impact."

**Dearth of math majors**

Neubrander said the primary cause for Louisiana's dearth of college math majors is that Louisiana high schools aren't graduating enough students prepared for math-intensive college-level programs.

Calculus is considered the entry-level math course for college. Just as algebra I is considered a gateway high school course for students who plan to attend college, calculus is a gateway college course for all undergraduate programs in science,
Neubrander doesn't want universities teaching math to high schools. Instead, he wants to develop a program to provide better math resources to high school teachers by linking regional universities to local schools.

"We have plenty of high school teachers fully capable of providing top-quality instruction at this level," he said. "The wood is there; the oxygen is there; we are trying to strike the match."

At Plaquemine High, Blanchard said she had been planning to refresh her calculus knowledge to offer a course to her students. She attended an advanced placement certification workshop at Xavier University this summer.

However, she had five strong math students and wanted them to have the advanced placement calculus this year. When she was offered the virtual class, she jumped at it.

"I took calculus 12 years ago," Blanchard said. "If you don't use calculus, it doesn't stay with you. I'd have to brush up."

Blanchard said she would have been comfortable offering it this year, but she would have to research some of the students' questions. Using the virtual classroom, she can shout for Zito's help into the microphone and get an immediate answer for her students.

Neubrander said the program is meant to offer teachers such as Blanchard a package of options -- from a virtual teacher and college-student tutors to a binder of teaching materials and step-by-step lesson plans -- to make it easier to offer higher level mathematics courses.

Not every school wants or needs the virtual class, he said. The program works directly with teachers with only occasional video classes at Slidell, Istrouma and Scotlandville high schools.

Walker High School's teacher is offering advanced mathematics during the first semester, and the virtual calculus class will be offered in the spring.

By the end of this year, organizers hope to work out the program's kinks through the lessons they learned from the program's initial year at Baker High.

**Last year's lessons**

Technology glitches were often an issue last year. For example, there wasn't enough bandwidth available, and sometimes the memory-intensive video wasn't clear enough to run the class.

None of the students in Baker High's first class scored high enough to earn full
college credit, according to reports from the City of Baker School System.

Students in advanced placement courses take a national test to determine whether they can earn college credit for the course.

Neubrander said the teachers should have worked more intensely with the strongest students, instead of focusing greater attention on the struggling students.

However, their ACT scores, which are used to determine TOPS scholarship funding levels, jumped between two to five points on the math portion of the test, Neubrander said.

"A five-point jump in ACT scores is almost unheard of," he said.

Even if those students do not pass the AP test, universities will benefit if their incoming freshmen were exposed to calculus, or at least had a strong enough foundation to enroll in a calculus course, Neubrander said.

For the high schools, the virtual class and university partnership make it easier for the schools to offer more advanced course work.

"I've been very impressed with what they are trying to do," Plaquemine Principal Jimmy Newman said. "I think the resources offered there are great for our kids."

**Meeting the challenge**

Iberville Parish Superintendent Martin Bera, who was hired from Brackenridge High School in San Antonio this year, said, "Kids want a challenge. When they see their peers succeeding, I would expect these classes to double and triple."

Brackenridge High's first AP course grew from fewer than 20 students to five full classes in three years, he said.

Offering more challenging courses is also a way to keep the brightest students from going to private schools, Bera said.

"I'm under the conviction that parents would rather send their children to public schools than private schools," Bera said. "When public schools aren't offering the programs they want, parents send (their children) elsewhere. If we offer these courses, I think parents will ask themselves, 'Why am I paying for a private education when I can get the same education, or better, for free?'"

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