INNOVATING SUCCESS

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– Mark Breerwood

Cypress Springs High School
Cypress-Fairbanks ISD
Cypress, Texas

School Statistics

2,495 students

Grades 9-12

Suburban

http://schools.cfisd.net/cysprings/index.html

Student Population

1% Multiracial

5% Asian/Pacific Islander

12% Caucasian

33% African-American

48% Hispanic

Cypress Springs High School Deepens Conceptual Learning, Boosts Summer School Pass Rate with AC Science Texas

Challenge

Cypress Springs High School is part of Cypress-Fairbanks Independent School District (ISD), the third largest school district in Texas and the 25th largest in the nation. As part of the state's 4x4 requirement, students must earn four credits of English, mathematics, science, and social studies in high school in order to earn a diploma.

"The 4x4 requirement means that chemistry is no longer an elective; it's a required class. As a result, we now have students taking chemistry who otherwise might not have taken the course, and many of these students find it very challenging," Mark Breerwood said, the chemistry team leader at Cypress Springs High School and a teacher for 22 years.

"A common problem in class comes from a student's inability to see chemicals on a particle level, like seeing how atoms respond to one another when molecules are mixed," he continued. "The concepts often seem vague and obscure, particularly if I teach in a more classic style where I lecture and students take notes."

Implementation

To help meet the new and expanded requirements of the Texas Essential Knowledge and Skills (TEKS) for Science, Cypress Springs High School began using Adaptive Curriculum (AC) Science Texas™ in spring 2012. AC Science Texas™, which was approved in the state's July 2011 Supplemental Science Materials adoption, is an innovative concept mastery solution that provides full coverage of the TEKS for Science in grades 5-8, biology, chemistry, integrated physics and chemistry (IPC), and physics.

At Cypress Springs High School, students work on AC Science Texas™ in computer labs and classrooms in courses such as biology and chemistry. The program's instructional units, called Activity Objects, integrate cross-curricular content with real-time feedback and assessment to enhance teaching and learning in science.

adaptive curriculum™

Keep Reading

Implementation Continued

"I use AC Science in all four of my chemistry classes. It aligns well with what we teach," Breerwood said, who estimates that his classes spend about 20 percent of their time working on the online program. "I like to use it to introduce and reinforce concepts, and to assess student learning. I also give students time to work on the program individually. A key benefit is that it gives students the ability to control the pace of their learning to meet their needs."

AC Science Texas™ helps students master core concepts and skills through participation in an immersive, differentiated learning environment. It engages students by tapping their prior knowledge and making connections to real- world scenarios.

"Adaptive Curriculum applies real-world connections to concepts that can be difficult to understand, which is particularly helpful when we're talking about things that are invisible to the naked eye," Breerwood said. "The more analogies we can draw from real life, the more students can see how the things they're learning in class apply to their day-to-day lives. This not only makes it easier to teach challenging concepts, but it motivates students and keeps them interested. It also makes it easier for students to explain what they've learned to their mom or dad or brother or sister."

With AC Science Texas™, realistic visualizations, interactive simulations, 3-D models, and virtual labs and manipulatives provide opportunities for hands-on learning. Unlike textbooks or drill-and-practice programs, this active learning approach motivates learners to explore, make hypotheses, manipulate items, and see the impact of their decisions, thus developing and deepening their conceptual understanding.

"Adaptive Curriculum does a great job encouraging students' natural curiosity," he continued. "Students love that they can go in and manipulate things and see what happens as a result. It's not like basic simulators on other websites where you can only control a variable or two. AC Science is more like a living textbook. It hits all the different learning styles and it does a really good job keeping students' attention.

Adaptive Curriculum's built-in standards alignment and search capabilities allow teachers to quickly choose Activity Objects that address their specific curriculum and standards requirements. Online assessments and reports, as well as printable activity sheets, enable teachers to easily monitor student progress, identify areas of concern, and keep students on task.

> "We can talk about what students experienced in their individual work with Adaptive Curriculum."
> – Mark Breerwood

"I go into the system daily to check students' progress," Breerwood said. "With the online assessments, I can also immediately see where students are doing well and where we need to go back and reinforce."

With virtual labs and manipulatives, AC Science Texas™ also helps schools save money while providing hands-on learning experiences. Students can easily explore concepts that otherwise couldn't be presented in class because of safety concerns, or a lack of equipment, materials, or lab space.

"Sharing labs can be a challenge and we don't always have enough equipment for every class," Breerwood said. "Adaptive Curriculum helps us overcome that. It also allows us to safely perform experiments with chemicals that would be too hazardous or toxic to use in a traditional lab."

Breerwood also uses AC Science Texas™ to teach chemistry in summer school. In summer 2012, he took students to the computer lab daily to work on the program. "Students loved it," he said. "They would constantly ask me, 'Do we have to go back to class or can we spend more time on this?' or 'If I don't get to this part, can I finish it later?' It's neat to see that."

Results

According to Breerwood, AC Science Texas™ has helped to deepen students' understanding in science. "I think it's made for much better conversations in class," he said. "We can talk about what students experienced in their individual work with Adaptive Curriculum. We can discuss things like what they expected to see in a chemical reaction, what they observed, and what surprised them. We can then draw conclusions together and make sure everyone has a good foundation before moving on to the next concept."

AC Science Texas™ has also positively impacted student performance. "It definitely made a difference in summer school," Breerwood said. "This past summer, we had a 100 percent pass rate, which is pretty remarkable when you think about the fact that these were students who had previously failed chemistry during the regular school year. It gave them the second chance they needed and it definitely helped improve their understanding."

"For teachers, AC Science gives us a powerful tool to use with our students," he said. "It allows us to better tailor our instruction to meet our students' needs. It's not a one-size-fits-all solution and it's not a passive learning system. Students have to listen and pay attention and actively engage — and that's where true learning takes place. It's obvious Adaptive Curriculum put a lot of time and effort into this program for the benefit of students because it definitely works."

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Deb Beavers, Your Education Partnership Manager

254-495-2827 | deb.beavers@adaptivecurriculum.com