Chemistry Teacher Conducts Experiments with Lumens Document Camera

"It has allowed the way I teach to be more effective," said Candy Sykes, "If I see they don't grasp it, I can change my lesson plan right there because I don't have to have copies made for everybody," she said.

Candy Sykes started her work career as an engineer. But 15 years ago, she transitioned to teaching art and music, and now high school chemistry and has been a teacher with the Fremont Unified School District ever since.

Step-Zoom Feature Speeds Homework Correction Process

In her classroom Ms. Sykes uses a Lumens PS400 document camera. "I love it; I use it everyday," she said. Ms. Sykes uses the PS400 at the start of every class to review homework. She shows the answers to the previous day's homework from her answer guidebook, whose image is taken from the document camera, and is then projected onto a white screen, and allows the students to self-check and discuss answers to the problems with partners. At the end of the homework review period, she will step in to answer pressing questions. During this period, she uses the document camera's step-zoom feature to quickly zoom in on an answer by pressing one button to focus in on that answer, then will press the step-zoom button again to zoom out to view all the answers on the page.

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Prior to using the document camera, she said she would have to photocopy the answer page and post it on the back wall, but she said it was unwieldy to have all the students out of their seats at the same time to check their homework and that it would take the better half of the period just for homework review. Now, with the document camera the entire process takes only five-to-ten minutes.

Subject:
Candy Sykes, Chemistry Teacher, American High School, Fremont, CA.

Technologies:
Lumens PS400 desktop Document Camera, projector, white screen, laptop

Usage:
Demonstrate chemistry experiments, show small or delicate objects (e.g. crystals, silicon wafers); create on-the-fly quizzes, students self-correct homework

Instant Efficiency, Time- and Paper-Savings

Ms. Sykes said that the use of the PS400 creates inherent efficiency. Compared to the previous year, all of Ms. Sykes classes are ahead in terms of sequence of lessons this year. "I don't feel so pressed to push the kids to catch up with what I am supposed to be teaching them," she said.

In addition to no longer taking the time to photocopy answers from textbooks, Ms. Sykes is able to save paper by displaying quizzes on a single sheet of paper using the document camera, instead of photocopying quizzes for each student and passing them out as she had done before.

On-the-Fly Lesson Plan Changes

Ms. Sykes said that using the document camera in her classroom has helped her gauge her students better. When she used an overhead projector, she would find that she was often in her students' line of sight. Now with a document camera, the image is much larger and clearer, allowing her to be out of the way, but facing the students, all of which allows for more interaction.

"It has allowed the way I teach to be more effective," she said. "In terms of planning, if I see their faces and need to change my lesson plan on-the-fly, its very easy for me to change and just put a textbook up. If I see they don't grasp it, I can change my lesson plan right there because I don't have to have to have copies made for everybody," she said.

Demonstrations the Whole Class Can See

Ms. Sykes said she enjoys using the document camera for chemistry demonstrations, and discussed a sodium reaction experiment as an example. Without a document camera, this demonstration would be impossible to show because she would need to have much larger amounts of water and sodium in order for the entire class to see, but using such large amounts could be explosive. But with a document camera, Ms. Sykes can conduct the experiment on a much smaller, yet viewable scale. "If I've got a beaker with water and sodium, I can zoom in on a tiny piece of sodium reacting. Everybody sees this and they're very excited because I can project the demo. So they can see the details of things that (might otherwise be) too small to see in the back of the room."

Another benefit of using a document camera is to show students items that are too delicate for passing around. Ms. Sykes said she once had a silicon wafer that she allowed the students to hold in their hands, and one of her students dropped the wafer. Now, she uses her PS400 to project the wafer, as well as delicate crystals for viewing crystal structure.

When asked how her students have responded to her use of the document camera she said they think its "cool." "They think it's the highest tech class we have at school." But, she added one caveat: "I do have to keep my manicure up," she said jokingly.