

## TECHNOLOGY AND HARKNESS: A FRUITFUL COLLABORATION

Tablet PCs are the latest addition to the technology-rich classrooms of Phelps Science Center, where all classrooms are equipped with computers, projectors and specialized equipment (including circular-motion turntables and a level, seamless runway) to support Harkness learning. Students and teachers are using tablets to create collaborative—and often interactive—documents in physics, chemistry, biology, astronomy and computer science classes.

Brad Robinson P'05, P'08 was one of the first teachers to use the tablet in his physics classes. “My students love to take turns solving problems on the tablet,” he says. “Having them work out problems while their peers watch encourages them to explain their reasoning much more clearly. It also allows me to give feedback directly as they set up their problems. It provides many kickoff points for discussion.”

Part of the tablet's success is its convenience. Students pass the notebook-sized tablet around the Harkness table, using a stylus (or pen) to write directly onto the tablet screen. It's as simple as writing on a piece of paper. Because the tablet is connected to a projector, the entire class watches the document evolve as a record of the conversation.

Using the tablet, students and teachers can access the Internet, software applications, interactive simulations, calculators and much more. In many science classes, the collaborative documents often incorporate inserted images, video animations and interactive proofs.

Scott Saltman, Science Department chair, feels that tablets play a strong role in supporting Harkness interaction. “The tablet takes the students' focus off the teacher and places it on the material,” he explains. “Instead of looking at the teacher drawing a representation of an idea, they look at the drawing itself. Students' questions and comments are then directed to the entire class, since the teacher isn't the center of attention.”

“Some visual learners have trouble taking notes in class,” explains Jeff Ward, chemistry instructor. “They stay focused on what we're looking at or discussing.” The tablet helps these students listen and observe without distraction. After class, teachers can post tablet documents to Blackboard, Exeter's courseware software, so that students can refer to them later on.

“In biology, we use a lot of animations to illustrate concepts,” explains Betsy Stevens, biology instructor, who added the tablet to her technology arsenal a year ago. “I wouldn't know what to do anymore without the technology. It makes so much more sense to the students when they see animations.”

The Science Department is not alone in integrating tablets into the classroom. There are currently 70 tablets in use across campus. As computers are replaced, faculty can elect to receive tablets in lieu of traditional workstations.

Exeter's commitment to technology in teaching continues to grow. Last fall, Exeter was one of only four high schools to receive a robotics grant from the Institute for Personal Robots in Education. The majority of recipients were colleges and universities. The schools were selected based on the excellence of their introductory computer science curriculum.

—Nicole Pellaton



*Biology students annotate an anatomy chart using a tablet PC. Their work is projected so that the entire class can watch and discuss.*