

One-to-One Computing Scenarios

The following scenarios describe how one-to-one computing can look in classrooms. Keep in mind that these scenarios show a snapshot of what is possible. They are not intended to address issues or obstacles that may occur in classrooms.

One-to-One Computing to Manage Multiple Classroom Activities Simultaneously

Mr. Wordsworth knows that his students learn a lot in the hands-on labs during the simple machines unit of his ninth grade physical science course. Even the least mechanical students engage deeply while studying inclined planes with a toy car track, trying different levers and fulcrums to lift objects, and testing pulley systems to lift their own weight. Unfortunately, the class has an inadequate supply of equipment and insufficient time to do the investigations well. Given the traditional 50-minute period, students are challenged to keep the investigations of each type of simple machine (inclined planes, levers, and pulleys) grounded in inquiry; for efficiency, the lab sessions are very procedural, directing students step-by-step. With more equipment and time, Mr. Wordsworth could create smaller groups with a careful selection of students so all students would be able to manipulate the equipment.

Things changed when each student was assigned a laptop. Mr. Wordsworth developed a WebQuest with another science teacher that takes students through several carefully selected simple machine simulations online. These simulations free up time devoted to direct instruction and better prepare students for the equipment used in the hands-on labs (see www.cosi.org/files/Flash/simpMach/sm1.swf*). The teaching team designed the WebQuest with a jigsaw strategy so that each student on a team can become an expert in one type of simple machine (via the online simulations) and be responsible for teaching key principles to other members of the team. Overall, the WebQuest allows greater options for student team investigations and provides direction for choices teams make, freeing Mr. Wordsworth to observe and guide students' work.

One-to-One Computing to Meet the Needs of All Students

Mrs. Warner has found that having one computer for every child can help her meet the needs of each student. In Mrs. Warner's sixth grade social studies classroom, all students have their own laptops connected to the district network. This setup allows Mrs. Warner to put individualized assignments into each student's folder.

Although all students are working on the same assignment about forms of government, students' individual assignments are adjusted to meet individual needs. For Richard, who struggles with reading and writing, his assignment has prompts to guide him. His final presentation will be created using a template. His Web links go to pages that have easier reading to better match his ability. He is given e-mail links so he can directly correspond with government experts. In previous years, Richard was frustrated because he often did

not understand the textbook, which was written at a level above his capability. He would get poor grades and became a behavior problem in class. His self-esteem plummeted, and he felt "stupid." Richard is actively engaged this year since he has his own assignments that no one knows are different from any others. He feels good about his work—he understands the readings and is willing to find other Web sites for information that are at a higher reading ability. He is coming up with ideas to contact his local legislators for information.

Emily, who is gifted, also has differentiated tasks. The assignments Mrs. Warner put into Emily's folder have much more depth than many of the other students' assignments. Her higher reading and comprehension levels allow Mrs. Warner to recommend Web sites that match her ability. Emily asks a lot of questions. The computer allows her to search for answers as her questions arise. Emily will design her presentation from scratch. She is responsible for finding experts in the field to correspond with. In the past, Emily breezed through her assignments and then socialized, which prevented other students from completing their work. Now she feels challenged and is more engaged in learning.

Irina's family recently immigrated to the United States from Russia, and she has difficulty listening, reading, writing, and speaking in English, although she is very intelligent and especially interested in the topic. Irina's folder contains links to Web sites written in simple English as well as some sites in Russian. She creates her presentation with an online presentation tool in Russian and uses instant messaging and e-mail to get answers to her questions in real time.

Mrs. Warner is amazed how this year her students are more actively engaged than in past years. Her students are developing research and presentation skills appropriate to their level. They are eager to learn, and they feel successful in this on-to-one computing classroom.

One-to-One Computing to Enhance Writing Instruction

After 30 years of teaching high school English, Ms. Rebecca Monroe understands that students improve as writers when they learn that writing is a process involving cycles of brainstorming, drafting, peer reviewing, reflecting, and revising. Experience has taught Ms. Monroe that giving students opportunities to publish their best work is another critical step in motivating young writers.

This year, Ms. Monroe's high school issued every student a laptop to use at school and at home. A summer institute for staff helped answer her technical questions about using the equipment. Brainstorming with other English teachers got her thinking about ways to use this expanded access to computers to support learning goals.

Today, laptop lids are up from the moment students sit down at their desks. Class often begins with a quick-write assignment, which Ms. Monroe compares to musicians doing their scales. Students settle into their seats, select a prompt from the choices Ms. Monroe has projected on a whiteboard, and get to work. After just five minutes, students save their writing to a document for later reference.

Next, Ms. Monroe shifts to a class discussion about their current assignment: writing a short story from the first-person point of view. The class has already read and analyzed several published stories, including both classic tales Ms. Monroe assigned and contemporary writing students found online. Ms. Monroe has promised students that they will have a chance to publish their own best work at the end of the semester in a class online literary magazine of their own design. Today, they discuss four opening paragraphs—all pulled from students' work in progress, and each demonstrating a different strategy for engaging reader interest. Ms. Monroe models the process of giving feedback in a face-to-face environment and electronically through e-mail or instant messaging.

Students settle in to spend the rest of class time working on their stories. Some students use the time to write, while others meet in peer review groups, sitting side-by-side with laptops open. A few do Internet research, looking for authentic details about the historical period they have chosen for their story. Ms. Monroe takes a seat in the corner to consult with any student who is ready for a story conference. Sarah practically races over with her laptop to show Ms. Monroe how she revised a scene. As Ms. Monroe gives her feedback, Sarah takes notes on her laptop. Ms. Monroe knows Sarah will consult her notes later tonight when she works on her story at home. Sarah mentions that she has arranged to work on her story at the same time as a peer so they can exchange instant messages to give each other feedback.

One student who missed class due to illness last week submitted a draft of his story from home, using his laptop. Ms. Monroe is happy to see his motivation. Earlier in the year, he had been one of her reluctant writers. Through e-mail conversations with his mother, she learned that he is an avid reader of science fiction. Ever since she encouraged him to write in the style of his favorite authors, he has never missed an assignment.

As the class period winds down, Ms. Monroe displays the calendar on the course Web site and reviews the due dates for draft submissions, feedback, and final publication, reminding students that their first draft with feedback from multiple reviewers is due at the end of the week. The next week, when final versions are complete, the class will select which stories to include in their online magazine. Ms. Monroe directs the students to a wiki she created where they will share their stories and other thoughts about the magazine, including ideas for the name of their publication. She tells the students that she will use the information from the wiki discussion to set up an online survey so they can vote on the final stories and publication name.

Ms. Monroe has become a great supporter of one-to-one computing, especially in a writing class. From a practical perspective, students find that working on their writing in and out of school is easier because they do not have to continually transfer files. The availability of wireless network connections in public places encourages students to get feedback from peers and from professional writers. Finally, individual laptops enable students to easily share and publish their writing online, which increases their motivation to produce quality work.