Computers: Today's Pencil
No longer just nice, but needed

Eight graders at Piscataquis Community Middle School in Guilford are scoring a new look — bright blue and white laptop computers. In the halls, all 68 students carry the powerful machines, check full of learning possibilities.

"Having each student equipped with a computer opens up so many possibilities. It makes a difference between occasional access and constant access," said Crystal Pient, computer and technology teacher at Piscataquis Community Middle School.

The school took the bold step of purchasing the computers after a pilot study showed that unsaturated students became enthusiastic learners with the computer as a tool. "No longer did these kids sit in class with their heads in their arms," said Principal Greg Bellmere. "These kids grew up on computer games, this is education in a mode they like. Interest is the key thing. You make learning fun and students want to do it." The Apple (iBook) became part of the desktop in September after the school received grants from Guilford of Maine and other sources to buy 118 of the state-of-the-art computers for every eighth grader, one for every seventh grader, and 25 for the fifth and sixth grade. Teachers received Apple Powerbooks and computer presentation equipment for every room for times when the teacher wants all students to follow along together.

Prient and Bellmere emphasize that these are only tools. Their power lies in what they do for the learning environment. Teachers who were once apprehensive about computers now say they can't teach without them. Instead of using paper and pencils, students reach for the laptops to research subjects on the Internet and to write reports. Teachers can see students in topics by tapping into their work sites. When a new topic raises questions, students pop in the WorldBook encyclopedia on CD-ROM.

"The first week of school for teachers was mind boggling, now it's normal procedure to see the computers in class," said Pient. "Instead of looking at these laptops as an add-on, it's a different way of doing things.

"Teachers at Piscataquis Middle School rely on resources to help find web sites and offer computer-use tips to teachers. The result is that both students and teachers are growing in confidence.

Bellmere asked each eighth grade teacher to use the computer for at least one activity by the end of the year. All teachers had responded by late November, he said. Though it is too early to say that computers have revamped the curriculum, the classroom is now a different place, said Bellmere. After just two months, the school is so sure that equipping students with computers is the right thing to do that they are hoping to provide all seventh graders with laptops next year. "It has gone from nice to needed," said Bellmere.

"Doing things differently is exactly the message that Seymour Papert, MIT education professor and proponent of a computer for every student, tries to convey.

"We have to spend time developing the vision beyond simply improving what we're doing now," said Papert. He said sending students to a computer lab is not much different from sending them to a special lab to work with pencils and paper. "If a class has no computers, students are learning only superficially from them," he said.

Crystal Pient agrees that computer labs aren't enough. "We did a great job teaching students to use computers as a tool, but they didn't let them use that way.

Papert believes that five years each student will have their own computer in the classroom, a direction he is eager for education to take. "People ask the question, 'But aren't you suggesting that students learn only about things they are interested in?' My response is that students will learn things in the context of something they are interested in," he said.

A physics textbook can be seen as one size fits all, said Papert. "But physics is connected to every aspect of life — such as sports and storms. Students can learn physics in the context of what they are interested in by using technology," he said.

At the Maine Youth Center in South Portland, Papert has seen technology change the course of learning for students who previously have failed in school. "My work at the Maine Youth Center in Portland is one of the deepest experiences of my life. For the majority of the kids in the youth center, the education system has not worked for them," he said. "They need a different way of learning to break out of the cycle of failure repetitively.

He works with 12 students at a time on projects that use technology more than pencil and paper. A recent project entailed building a motorized vehicle of Lego equipped with a programmable computer chip. The goal was to make a vehicle that could climb a steep ramp without tipping over.

"By seeing how their design fails, it leads the kids to other ideas and gets them thinking about equilbrium, stability, centri of gravity, power and all the factors that go into it," said Papert. "I see failure to point the kids into an area to investigate." This is knowledge on demand. "Though students might hear about friction once in a certain grade, a project like this inspires students to learn about friction now.

The project is not all physics. Students write about what they're doing and record their building project using digital photographs and videotaping, and then store their archives in a portfolio.

One Maine Youth Center student was able to build a vehicle that could climb a 67-degree incline. "Amazing - I wouldn't have believed it," said Papert. He is convinced that some of his students are gifted and others are geniuses. "I have worked through building these machines before and I try to think ahead of time of problems that might arise. Many times these students came up with better ideas to solve problems than I did."

Using technology helps re-direct learning from teacher-centered to learning-centered, where the teacher becomes a learner along with the students. "One of the barriers of using projects like that is that there are so many ways to handle it — you can never tell where the project is going," he said. Students learn from one another, as teachers Papert.

For information on Seymour Papert's Learning Barn in Blue Hill, visit his website at: www.learningbarn.org

Seymour Papert is a MIT professor and distinguished professor at the University of Maine. Today Papert is considered the world's foremost expert on how technology can provide new ways to learn. He has carried out educational projects on every continent, some of them in remote villages in developing countries. He has founded a small laboratory in Blue Hill, the Learning Barn, to develop methods of learning using the latest technologies. As an advocate for the learning of all students, he spends a large part of the time working in the Maine Youth Center in South Portland, the state's facility for teenagers troubled by serious offenses.

— J. Duke Avery, Commissioner of Education