Mission
Teaching Through Technology
A five-year plan to fully integrate technology into instruction has made a good school even better.

Patricia Patterson

Nob Hill Elementary School is an educational community that in five years has succeeded in moving from a 20th century textbook-driven model to a 21st century model characterized by the seamless use of technology at all levels of the curriculum. Here’s how we accomplished this transformation.

Getting Started
In 2001, when I was appointed principal of Nob Hill, it was ranked as an outstanding “A” school by Florida state criteria, even though it used little technology and relied almost exclusively on textbooks for teaching. An inventory found only 175 instructional computers in classrooms, the computer lab, and the media center to serve more than 900 K-5 students.

IN BRIEF
The author describes the process used to transform an elementary school that used little technology to one where technology is embedded in every aspect of instruction. It was a process that required innovative funding for equipment, training, and rewiring. Teacher resistance had to be overcome and parents reassured. The result is a learning community in which teachers and students have succeeded in infusing technology seamlessly into classroom practice.
POSSIBLE:
I asked myself two questions:

If Nob Hill could be an “A” school without technology, what could it become with technology?

What should students know and be able to do if the school had a staff highly trained in technology and a quality program to integrate technology into teaching?

As I began to shape my vision, two things became paramount: First, I wanted every teacher to become proficient in using technology in all aspects of instruction. Second, I wanted to create an infrastructure that would be self-sustaining and self-renewing.

With these in mind, I established several goals:

■ Nob Hill would become a model for teaching with technology;
■ Nob Hill would change to a technology-infused curriculum;
■ All teachers would become proficient in using software applications, trouble-shooting, and teaching with digital resources;
■ Student achievement would be built on their technology strengths; and
■ Teachers would create a more effective instructional environment by increasing student engagement, authentic assessment, and making learning fun.

Building the Infrastructure

Once the vision and goals were established, we had to overcome several large hurdles as we began to build the infrastructure. The first was identifying and getting rid of archaic equipment. The school had a policy of putting new computers in the upper grades and sending older, trouble-prone units to the lower grades. These had to be replaced. We also were an older school that was not wired for extensive technology, so acquiring the necessary funding to purchase new equipment and build new outlets became a very important issue.

We began by identifying and making use of systems and applications resources already available to secondary schools in our district, such as e-mail, free Web sites, and Web-based programs. Determining the needs within each grade level was the next step. Through self-evaluation and assessment tools, we identified hardware and software needs, teacher proficiency levels, and teacher interest in integrating technology into the curriculum.

With this information, we were able to outline a professional training program and to begin building a scaffold that would support a five-year plan of technology infusion. We wrote a school improvement plan that reflected technology integration. From that plan, each teacher developed a personal growth plan indicating the training he or she would need.

We were able to redirect several funding sources within the school’s regular budget for technology. We also used inservice funds to train teachers in using digital resources for instruction, and earmarked money received from the state for being a high-performing school to buy equipment. The PTA made annual donations for training and equipment, and we used district capital improvement funds to buy computers.

Winning Over Teachers and Parents

Although our plan looked good on paper, it wasn’t easy to achieve. First, some of the resources we were redirecting to purchase technology equipment, software, and wiring also were needed for other materials and supplies. This meant that teachers had to make hard choices. Then we had to win over some teachers who thought that we shouldn’t change our educational programs and processes. Their attitude was: “Why fix something that isn’t broken?”

Some of the other barriers we had to overcome included:

■ The fear factor;
■ Disinterest;
■ Lack of time;
■ Comfort with the status quo;
■ Not wanting to look foolish in front of students; and
■ Learning new ways to teach.

In order to overcome teacher resistance, we introduced several technology-related changes, such as using an online grade book program and an electronic lesson plan template. We also replaced staff meetings with e-mail communication.

We started the integration process by familiarizing students in the primary grades with introductory computer skills and exploring basic math, science, and language arts software. Students also acquired rudimentary word processing skills by keyboarding and editing their own stories, which were supported by graphic organizers. Our intermediate students used more advanced software programs and applications.

To win over parents, we started having technology nights and developed a school Web site they could visit. Getting parents excited about technology provided us with needed support in the form of additional resources that helped us acquire more software and equipment.

The Teacher Takeover

In our fifth year of this vision, teachers literally have taken the development of technology and training out of my hands. They conduct their own yearly needs assessments, have become self-directed, and use every opportunity to teach one another. Each grade level has three to four “techies” who provide technical support and training on new technology tools and digital strategies. A learning community has been initiated and the adoption of a peer-coaching model will further promote collaboration and implementation of new classroom practices.

There is now an increased emphasis on project-based learning and students are using technology in a student-centered learning environment for research, collaboration, communication, presentation of knowledge, and multimedia production.

Measuring the Impact

Nob Hill Elementary School now is an educational community where technology, data, research, and collaboration provide a quality education for children.
We have overcome the belief that moving from a textbook-driven curriculum to a technology-infused curriculum would hurt test scores. There was a real concern that teaching students to think and act differently might affect their performance on standardized tests. In the four years that we have tracked reading, writing, and mathematics achievement, we have seen some dips in scores, but nothing that could not be explained by other factors. Nob Hill continues to be an “A” school.

The areas where we have seen the greatest impact of technology are in student and teacher interest and motivation, improved student behavior, increased technology skills for both students and teachers, and developing of higher-order thinking skills in students.

Our mission continues to be the implementation and support of technologies that provide a high-quality and safe learning environment that allows all students to achieve at their highest potential. For teachers, the emphasis is no longer on the acquisition of skills but working together to create technology standards and sharing best practices. We have moved from technology for information management to a constructivist, authentic, problem-based use of technology that becomes self-renewing as teachers share best practices with one another. Our new goal is to transform every classroom into a digital learning environment. As principal, my role is to help provide equitable and effective access to technology, as well as appropriate and timely technical support. Today, we have 435 computers in our building, including three desktops in each of our 60 classrooms, and nine computer carts with 180 laptops. Every teacher has a laptop, where lesson plans and grades are kept, and we have created two mini-labs in rewired classrooms.

At Nob Hill, we have accomplished Mission Possible. Teaching with technology is here to stay.

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WEB RESOURCES

Internet4Classrooms provides teachers with links to grade-level skills to help students practice on specific content areas.
www.internet4classrooms.com/grade_level_help.htm

The National Library of Virtual Manipulatives has developed a library of interactive, Web-based manipulatives for K-12 mathematics instruction.
http://nlvm.usu.edu/en/nav/vlibrary.html

Topmarks Education is a Web site designed to provide easy access to the best educational sites.
www.topmarks.co.uk

Marco Polo provides free classroom lessons and materials in seven content areas.
www.marcopolo-education.org

Kinetic City is a collection of science experiments, games, and activities.
www.kineticcity.com

Quia offers a variety of online educational activities, including Web-based versions of workbooks and textbooks.
www.quia.com