When technology inspires

School integrates HP technology, test scores improve

"HP's commitment to technology in education not only enabled Dunbar to achieve its instructional goals and improve its academic standards. It has also let us develop a model other schools can consult as they seek ways to integrate technology into their curricula. We've ignited the spark of learning in our school. It's exciting to know that spark will soon catch on in other schools as well."

– Dorinda Wade, Principal, Dunbar Primary School

HP customer case study: Dunbar Primary School leveraged HP technology to enhance its independent investigational approach to project-based, multidisciplinary learning.

Industry: Education

Objective:

Dunbar Primary School wanted to leverage technology to enhance its application of the independent investigational model in its curricula.

Approach:

HP Technology for Teaching Grant.

IT improvements:

- Wireless technology lets students connect with each other
- Digital photography permits engaging projects
- Students able to conduct online research

Academic benefits:

- Assessment test scores have improved
- Attendance up

Schools can approach technology in a number of different ways. Perhaps the most common is to install a few computers for student use in a computer lab or the school library. Students then use these systems for discrete tasks, such as word processing or learning keyboarding skills.

A more innovative way to use technology, however, is to integrate it with broader curricular goals and instructional methodologies. That's the approach taken by Dunbar Primary School, Lufkin Independent School District, Lufkin, Texas.

"We don't want technology to be something that students use for special occasions," says Dorinda Wade, Principal, Dunbar. "We want it to be a routine part of what our students do every day."

It's an inspiring vision, and with the help of the HP Technology for Teaching grant, Dunbar has shown it's not only possible; it can also have a remarkable impact on students' academic experience.

Starting with independent investigation

Dunbar Primary, a first and second grade school, is located in a small city about 1 1/2 hours north of Houston. It has a unique mix of students. About 40 percent are gifted and talented students who attend the school by choice. The rest attend because they live nearby; of those students, a high percentage are considered at risk and come from economically disadvantaged backgrounds.

For Dunbar, this mix also presents opportunities. Why not find ways to combine classroom activities, connecting students for project-based activities so they can inspire and help each other?

"We don't want technology to be something that students use for special occasions. We want it to be a routine part of what our students do every day."
Dorinda Wade, Principal, Dunbar Primary School

The first Dunbar teachers to put that thinking into practice were Sue Rolf and Jean Ann Keen. Rolf and Keen are responsible for some of the school's gifted and talented students; they lead the campus' only multi-age classroom. They came up with a multidisciplinary project to teach students at both age levels about the structures of vertebrate animals. "We based it on the independent investigational model," Rolf says. This model incorporates seven steps: topic selection; goal setting; performing research; organizing data; goal evaluation; creating a project; and presenting the project.

The program began with a module on the architecture of inanimate objects. For the project portion of the module, the students built a geodesic dome out of PVC pipe. "It filled the entire classroom," Rolf says.

Next, the teachers extended the "connection" concept to the greater community, arranging for professionals from an area hospital to come into the classroom and perform a mock bone surgery on a life-size doll. Other teachers in the school were now becoming interested in the program, and Rolf and Keen began considering ways to connect their classrooms with others on the campus.

About that time, Dunbar learned about the HP Technology for Teaching grant program. "We already had computer stations in our library," Wade says. "But we began considering what we might do with a wireless network and mobile computers right in the classroom."

Then Dunbar won the first phase of the HP grant, and suddenly the school had the technology to take its "connecting" concept to a whole new level.

Connecting five classrooms

First, Dunbar expanded its vertebrate project to four other classrooms. During this phase of the program, each class selected a type of vertebrate to study, such as mammal or reptile, again applying the seven-step investigational model.

This time, however, the children had additional access to HP Tablet PCs and HP digital cameras in their classrooms. When they chose a final project, their idea was to make claymation movies. "It was the most fun I've ever had in the classroom," Rolf says. "The students made clay animals and used boxes to create backdrops showing the animals' habitat. Then they used their HP digital cameras to create their movies." The children took successive stills of their clay creations, moving them slightly for each image. "Because they'd researched their animals, they were scientifically correct. For example, they made a frilled lizard, and they knew how to make him raise his frill and open his mouth. They were very realistic."

Next, the five classrooms combined their individual movies into one and held an Academy Awards-style event to present their creation to their parents and teachers. "They showed their movie on a big screen in our cafeteria," Rolf says, adding that the students and teachers dressed up like movie stars for the event.

The students wrote scripts that incorporated documentary-style voice over narrations. The sophistication of their work impressed Rolf. "It was incredible to hear how good the script writing was. Because of the research they'd done, they really knew the subject matter."

Next, the five classrooms combined their individual movies into one and held an Academy Awards-style event to present their creation to their parents and teachers. "They showed their movie on a big screen in our cafeteria," Rolf says, adding that the students and teachers dressed up like movie stars for the event.

More connections

By then, the project had captured the attention of the entire campus. So when Dunbar won the second phase of the HP grant, which provided the school with additional Tablet PCs and digital projectors, the other teachers at the school were quick to sign on. "All 18 of our teachers are now involved," Wade says.

Having the entire campus wired meant the school could connect the students interdepartmentally. But the school also began looking beyond its walls to connect with the community and other schools across Texas. "We named this part of the project 'Connect the D.O.T.S. Across Texas,'" Rolf says, explaining that D.O.T.S. is an acronym for Developing Our Technology Skills. Each of the school's 18 classes is collaborating with another class somewhere in the state to share information about regional ecology and geology. "We're using e-mail, web cameras, and streaming video, as well as snail mail to share things like soil and rock samples."

The second grant also provided the school with additional resources to enhance its teachers' professional development which began with the first year grant through The International Society for Technology in Education (ISTE).

Customer solution at a glance

Primary application

- Elementary classroom education

Primary hardware

- HP Compaq tc1100 and tc4200 Tablet PCs
- Cart to house tablets
- HP ProCurve Networking Wireless Access Point 420
- HP Digital Projectors
- HP Digital Cameras

"We surveyed our teachers and discovered a wide range of technical skills. Some were very comfortable with computers. Others used them to check email and that was about it," Wade says. So the school held training sessions to familiarize teachers with the new HP Tablet PCs and other equipment. The training incorporated the ISTE National Education Technology Standards to help teachers' understand how to integrate technology into their curricula. Dunbar also looked for other ways to help its teachers, such as allocating time for them to gather and plan their D.O.T.S. projects on staff development days, and presenting "technology tidbits" during faculty meetings.

Improved scores

With technology-integrated curricula now the norm at Dunbar, the real winners are the students. Attendance has gone up – students don't want to miss school when they're working on this type of project. And assessment test scores, Wade notes, have steadily improved since the school received its first HP grant. "Students aren't just sitting in a classroom listening to teachers and filling out worksheets," she says. "They are engaged and motivated. They've taken ownership of their own learning."

Needless to say, Dunbar will never go back to its past ways of teaching. "We've proven the value of this instructional approach," Wade says. "We're excited, the kids are excited, their parents are excited. We've transformed our school, and we couldn't be more pleased with the results."

To learn more, visit www.hp.com

4AA1-2697ENW, June 2007

invent