

Equipping Students Worldwide

Providing discounted surveying equipment and training to educational institutions worldwide helps keep students on the cutting edge.



By Daniel Brown

It comes as no surprise that state-supported colleges and universities are strapped for cash these days. As tax revenues have dropped, states across the country have had to lower subsidies to their schools. In the West and Pacific Northwest, several states have reduced their subsidies to colleges and universities by 25 to 30 percent, says Jack Walker, chair of the Geomatics Department at Oregon Institute of Technology. "Across the nation, higher education is being severely impacted by the recession," says Walker.

As a result, surveying schools find it nearly impossible to pay full price for today's high-end surveying equipment. Even in good economic times, it's difficult, if not impossible, for them to pay full price. Take a class of 25 surveying students, for example. If the instructor wants them to work in teams of three, that's about eight teams, and if each team needs a \$50,000 GPS system, the total comes to \$400,000. Schools simply don't have that kind of money.

"Acquisition costs can be extremely high," says Walker. "Plus, there are multiple types of equipment, and every three to five years the equipment becomes obsolete as new technology emerges. You need to replace the equipment."

Back in 2005, upper management at Topcon Positioning Systems spotted this need for surveying equipment, especially the GPS variety, and launched the Topcon Educational Partnership Program (EPP). The program supplies colleges, universities, technical schools,

and labor union training programs with state-of-the-art surveying equipment at educational discount prices. Dealers sell the equipment, then provide training at a nominal rate.

Through this program more than 500 educational institutions in North and South America and Europe have been supplied with surveying and GPS equipment. In the United States, 153 colleges and universities had bought equipment as of January 2009. "We use the equipment in close to 20 courses," Walker reveals.

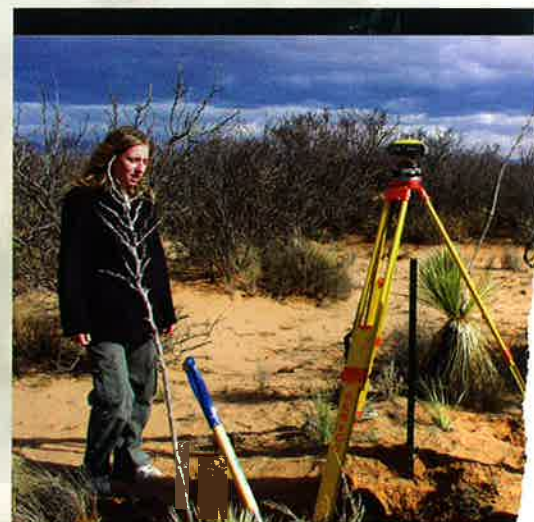
The University of Maine was one of the first schools to benefit from the program. "We got our first GPS system in about 2005," says Raymond Hintz, professor of surveying engineering technology. "We got two complete sets of HiperLite + GPS systems—two bases and two rovers. We used them in Practical GPS, Advanced Practical GPS, Advanced Surveying, Surveying Capstone, Adjustment Computations, and Practical Field Operations. University of Maine offers a four-year degree program in surveying. Hintz says that eight months ago, the university bought three base stations and three rovers in the GR-3 GPS line of equipment.

Bureau of Land Management Plays a Role

In the past, the University of Maine has received funds from the U.S. Bureau of Land Management to enhance the ability of the BLM to hire four-year de-greed students from the university, Hintz notes. "BLM gave us money to create an educational system to prepare survey-

ors for all problems they will face in their career. BLM does cadastral surveying, which means they do retracement surveys of the boundaries of federal lands. The money we have received from BLM was used in a variety of ways, including the purchase of survey equipment."

Dominick Auletto, former vice president of business development at Topcon, says he launched the Educational Partnership Program by working closely with the University of Maine. He had worked with Dr. Hintz for some years and collaborated with him to shape the EPP. In working with the University of Maine, Auletto says he learned that the surveying classes needed multiple software packages "so a class of 15 students



▲ Students at New Mexico State University use GPS equipment in the desert north of Las Cruces.

did not have to all huddle around one computer."

"We sold them the GPS hardware and gave them three complete software packages," Auletto recalls. "I would say in most cases that sufficed because most of the classes had about 20 or 25 students, so having seven or eight students per monitor was acceptable to the schools. They had the option to buy more software packages, but they rarely have done that."

Auletto says Topcon started the program by focusing on approximately 25 schools that had four-year degree programs in surveying. A top priority was given to large schools such as the University of Maine, Oregon Institute of Technology, New Mexico State, Penn State, Ohio State, the University of Connecticut, and the University of Florida. After that, Auletto shifted the focus to engineering universities that offer surveying courses, then to two-year associate degree programs in surveying.

"The next phase of the program was geared toward the training schools at the labor unions," Auletto says. "We started with the Operating Engineers and from there branched into the Laborers Union."

The package of equipment originally formulated for the Operating Engineers was Topcon's GR-3 Pocket 3D GPS system. The package included one set of GR-3 receivers, an FC-200 data collector, and two sets each of software: the G3

GLONASS L1 L2 Tracking; the G3 GPS L5 Tracking; and the G3 Galileo Tracking. All base accessories and rover accessories were included as well.

"The package for the unions has special software dedicated to the construction market," says Auletto. "Topcon and the dealers would offer a special program to the operating engineers for machine control equipment," says Auletto. "The dealers would do the installation on their dozers, motor graders, and excavators. Then Topcon would come in and offer the GPS package to work in conjunction with the heavy equipment."

Word of Mouth

Auletto says word of the program spread quickly among surveying professors at universities and colleges. "They share that information, and that's how word got out," Auletto explains.

In the Southwest, Tony Trujillo is the president and general manager of Holman's, a Topcon dealer in Albuquerque, NM. "The real purpose of this program is to allow each and every student to get hands-on experience with the latest surveying technology," says Trujillo. Holman's has provided equipment to three colleges in New Mexico, one in Colorado, and one or two in Arizona.

For Central New Mexico Community College, Trujillo says Holman's has provided equipment on four levels. The first level includes theodolites, levels, and total stations; the second level is GPS

equipment. The third level is GIS hand-held units, and the ultimate is to use a GPS network with Topcon's Net-3 equipment. The city of Albuquerque has several GPS networks, and a surveyor can use the city's base stations to reference their own control points, Trujillo says.

At Purdue University, associate professor of civil engineering Steven Johnson says the department keeps a minimum of seven total stations as teaching tools. In 1992, Purdue bought four total stations and 10 levels, and Topcon agreed to contribute three total stations each year on loan. Through Positioning Systems, a dealer in Indianapolis, Topcon rotates those three stations out and provides three new ones each year. Plus, over the years, Purdue has bought two more total stations. Johnson says Purdue also has bought a GPS system from Positioning Solutions through the EPP program.

Johnson says he stays away from using robotic total stations to begin an engineering education. "I want them to understand the numbers," he says. "If everything is automatic they don't know what they're getting. I don't want to automate it. The students can always graduate up to robotic total stations in our upper division classes."

"We have integrated GPS systems across the curriculum," says Steven Frank, an associate professor at New Mexico State University. "We have a GPS course, but we use the GPS equipment



▲ A Purdue University student gets a backsight using a total station—*courtesy Purdue University*



▲ Students at Oregon Institute of Technology collect a point with a GPS receiver.