



of
TrigStar
winning
students

Expanding

BY WENDY LYONS

Like many things in the Lone Star State, the Texas Society of Professional Surveyors (TSPS) Education Committee is big. "It's been divided into several subcommittees," says TSPS board member Bill Coleman, RPLS. "We have a whole division that deals with educational activities. It's one of the major things we do."

The education committee supports the society's basic mission to further the profession and provide information about surveying to everybody, including those outside the profession. For more than 50 years, TSPS has been developing and offering courses and seminars to professionals, paraprofessionals and the public, such as educational and fun retracement seminars, advanced technician short courses and more. But last year, TSPS decided to lower its sights—figuratively. "We've got stuff in junior colleges. We have stuff in universities.

A Texas society's new educational focus exposes high school students to surveying.

We have seminars and short courses for professionals, and we have a pretty darned good convention with good educational opportunities," Coleman remembers thinking. "But what about high school?"

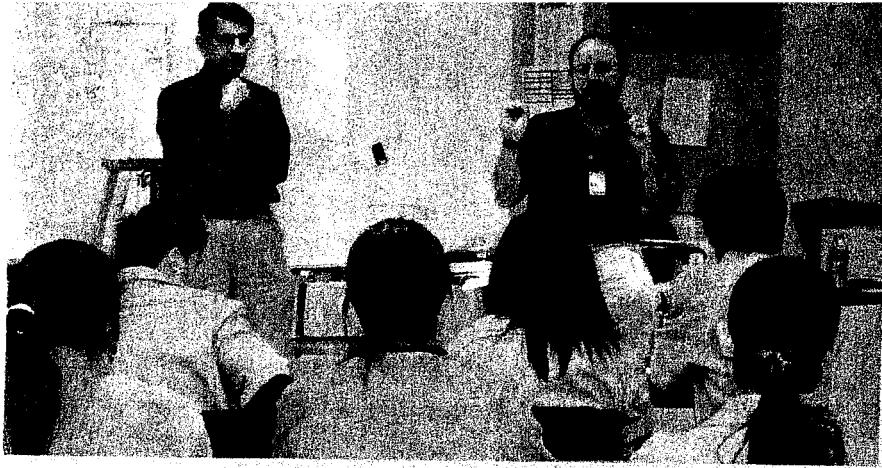
With this goal in mind, TSPS held its first-ever High School Educators Retreat on the campus of Texas A&M-Corpus Christi in June 2007. The objective of this geospatial teachers conference was to convey the integral role surveying has played throughout societal development and to show educators how to incorporate this knowledge into their high school

curricula. The event drew teachers from across the state, including several teachers of TrigStar-winning students, and led to the creation of a statewide land surveying competition for high school students.

Making Connections

It was at the retreat that Coleman met Barton Burnett, the lead teacher of the Engineering Academy at Duncanville High School, a comprehensive high school south of Dallas. Typically, comprehensive high schools offer career and technology classes as a supplement to

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SkillsUSA District 6 Surveying Competition Winners

First Place:
Zach Lewis, senior
Coleten Hayden, junior
Jefferson Mejla, senior

Second Place:
Andrew Dykman, senior
Rubi Gaona, sophomore
Mathew Lopez, sophomore

Third Place:
Wraychel Fobbs, junior
Rachel Acosta, junior
Bethany Benardi, sophomore



nology classes. "SkillsUSA is 100 percent about a student program that develops leadership, personal characteristics and management skills," Burnett says. But, for students, the icing on the cake is when they demonstrate what they've learned at district, state and national competitions.

When Burnett found out how "desperate" the shortage is for surveyors of all levels, he told Coleman, "You're going to completely miss the boat ... if you do not actively get involved in SkillsUSA and develop a competition that shows people exactly what surveyors need to be today." Up to that point, Coleman says, "It occurred to me that besides TrigStar we did not have a program for high school education."

Setting the Standards

By August, just two short months after the TSPS-sponsored geospatial teachers conference, Duncanville High School administrators approved Burnett's proposed surveying program and purchased his surveying and mapping curriculum, Design of Structures 3 by Amatrol, an Indiana-based company that provides high school level pre-engineering and university-level engineering curriculum and more. "Amatrol has some fantastic equipment and training modules ... developed by engineers and technicians," Burnett explains. "I've got students fighting to get on that module." The Amatrol module includes real-world surveying instruments, GPS and accessories, along with a full interactive multimedia component. Within weeks, Burnett had three three-person teams on the surveying module preparing for the February SkillsUSA district competition with three other teams on a waiting list.

Top: Barton Burnett, Duncanville High School Engineering Academy lead teacher (right), and John Pierce, RPLS, of SAM Inc., give the teams of the SkillsUSA District 6 competition an orientation on campus. Below: Pierce orients surveying teams to the equipment used for the skill section of the competition. Opposite: Andrew Dykman, Mathew Lopez and Rubi Gaona perform the skill section of the surveying contest.

es; Duncanville, however, places career and technology classes on an equal basis with core academics. This means Burnett, a self-described history buff, can infuse his engineering classes with the history of engineering. "We studied the Romans, for example, and how they had a surveying tool called a groma," Burnett says. The groma, the principal surveying instrument of the Romans, was used to survey right angles and straight lines. It had a simple design consisting of a pair of crossed horizontal arms perched atop a long vertical shaft. Hanging from the end of each of the resultant four arms was a conical metal plumb bob attached by a long cord. "We talked about how—with just using this groma—in Germany, they made a wall six miles long that only had a three-foot deviation," he says. "I just thought that was incredible accuracy."

The TSPS retreat was a success. "This was the first teachers conference that I learned something every single moment I was there," Burnett says. "It was the most worthwhile conference I'd been to in years." While attending the retreat, he decided to develop a civil engineering curriculum based on surveying for Duncanville's Engineering Academy.

But Burnett's sights weren't just focused on the 120 or so students in his engineering classes. He is also a regional district director of the Texas chapter of SkillsUSA. Formerly known as Vocational Industrial Clubs of America, SkillsUSA is a nonprofit national organization described as a partnership of students, teachers and industry representatives working together to ensure America has a skilled work force. Participation in SkillsUSA is open to public high school students taking certified career and tech-

To help with competition costs, TSPS called for industry donations from its membership and established a matching-funds program. With a \$500 donation from Precise Land Records of Dallas and \$750 from the Dallas Chapter of TSPS—both matched 100 percent by TSPS—Burnett's student teams purchased \$2,500 of equipment, including hard hats, high-quality safety vests, eye protection and two-way radios.

In the meantime, Burnett, the TSPS education committee and Coleman worked together to design a SkillsUSA surveying competition. By October 2007, the educational committee of Texas SkillsUSA approved the three-part surveying competition consisting of a résumé/interview section; a 100-question, two-hour abridged NSPS Certified Service Technician Level 1 (CST 1) written exam; and a challenging field exercise utilizing TSPS-loaned equipment, which ensured that no team had an unfair advantage.

The Icing on the Cake

On Feb. 1-2, 2008, nine high school students—four females and five males—demonstrated what they'd learned over the past six months at the SkillsUSA District 6 competition. "We were the first surveying competition for SkillsUSA in the nation—ever," Burnett says. "There is no surveying event in SkillsUSA that actually has a surveying team on the ground taking measurements, calculating measurements and all of the raw data. There are some events called surveying, but they are using software only—no field work." And that was a critical factor to TSPS. "If you're going to do a skill-based program in surveying, you must include field activities," Coleman says. "It's not just academic."

"It was definitely a challenge," says Coleten Hayden, 16, whose team won first place. "They made it impossible to get from one point to another point by putting a big building in the middle, so you couldn't survey it. So, what you had to do was ... use the law of sines or the law of cosines to get the angles of the former points and the distance of the former lines and figure out the distance of the hidden line."

Before Burnett introduced the new surveying module to his class, Hayden didn't

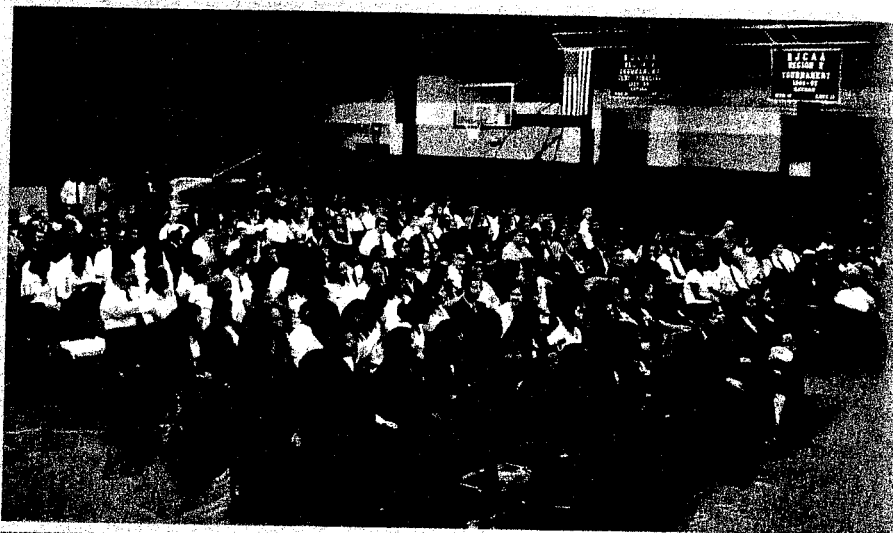
even know what surveying was. "I knew you looked through a telescope or a scope or something like that," he says, "and that's about it." Now he thinks a surveying career may be a good fit for him. "When I saw that you get to use high-tech equipment outside, that's just a two-for-one for me because I love technology, but I also love being outside and getting fresh air," he says.

Focus on the Future

For their next challenge, Hayden, his teammates and the second- and third-place teams from District 6 go on to compete in the SkillsUSA Texas Leadership and Skills Championships in Corpus Christi this month. Along with more advanced

surveying contest to the national board in August. "What I have to do is talk to ten other states to come in and do the competition so that it will go national," she says. "The contest Bart's drawn up with the surveyors is a good competition. It's far above the one that is in place right now. ... And hopefully, next August, it will be accepted and we can put it in place so that it will go to nationals." She adds, "And we are looking forward to the surveying association to be a part of that."

Coleman and TSPS are looking forward to working with Burnett and SkillsUSA, too. "This first contest was almost like the birth of a grandchild," Coleman says. "We have this child that's ready to grow and



An estimated 700 students and teachers attended the SkillsUSA Texas District 6 awards ceremony held at Texas State Technical College in Waco on Feb. 9, 2008.

fieldwork, competitors will take the full CST 1 exam, officially administered, with Level 1 certification given to those who pass, Coleman says.

In June, Burnett and his student teams travel to the SkillsUSA National Leadership and Skills Conference in Kansas City, Mo. There, they will introduce the competition to other state chapters through a training session that will explain surveying as a career, discuss applicable high school classes, and, of course, demonstrate the competition. "My goal is to get this established at a national level," Burnett says.


Taking it national is also the goal of Janet Conner, executive director of Texas SkillsUSA, who will present the District 6

take off and make its way in the world." And based on the enthusiastic reception Burnett and Coleman have seen over the months from the surveying industry, high school teachers and students, both men have good reason to be hopeful—and proud. "We've already got people who are going to become surveyors based on what happened at that geospatial conference in June last year," Burnett says. "I cannot wait to see how far this is going to go."

Wendy Lyons is POB's associate editor.

- For more on SkillsUSA, visit www.skillsusa.org.
- To learn about Amatrol, visit www.amatrol.com.



 You replied on 5/16/2008 7:52 AM.

Burnett, Barton

From: Joe Reid [Joe_Reid@Amatrol.com] **Sent:** Fri 5/16/2008 7:44 AM
To: Burnett, Barton
Cc: Kent Powell
Subject: RE: Improving engineering education at UTD
Attachments:

Hello Bart,

I enjoyed talking with you on Wednesday evening and thanks for forwarding this email. I will await Dr. Goeckner's telephone call.

I understand that you are working with our Matt Rohr and received the latest version of SkillAce (the new name). I also understand that he is working with you on some minor issues.

You indicated that you would like some statements about industry that would be beneficial as you make a case why this is different than "modular" technology. As we discussed, the learning materials (and equipment) have been developed for and with industry. Our partners include companies such as Ford Motor, Tropicana, Quaker Oats, General Mills, Caterpillar, Toyota and many others. While Tropicana has very sophisticated training systems from us, their favorites are the mechanical and electrical units you have in your class because their people are missing the basics. Like Tropicana, Ford Motor Company uses the same materials that you use with your students, we just print with their own cover.

Amatrol has been successful because we focus not only on what an individual needs to know but also what industry says they need to be able to do. That's why skills are included in the materials...to make students job-ready. It does not matter whether you get the skills at age 16 or 60 the same ones apply as these are built from foundational to advanced engineering/technical concepts.

Hope that is helpful.

Joe

-----Original Message-----

From: Burnett, Barton [mailto:bburnett@duncanvilleisd.org]
Sent: Thursday, May 15, 2008 1:47 PM
To: Matthew Goeckner
Cc: Joe Reid; Paul Perkins; Jones, Valorie; McKee, Kena; Hawkins, Ayesha; Omilabu, Omileye
Subject: RE: Improving engineering education at UTD

I agree we really need to him to see how we do things here. We will work our schedule around whatever you two have.

Going to our conversation this morning, starting next year we will start identifying 9th graders who are interested in becoming engineers and are also possibly interested in UTD. We will do this by those enrolled in our Pre-Engineering classes and by the work we will do with two of our 9th grade Algebra teachers, Mr Hawkins, and Coach Omi.

By using the SkillPro Ace student management system from Amatrol we will document all of the science and math objectives they have mastered through their LAP quizzes, this information will be put into a portfolio we will then give to UTD with student permission. We will also in conjunction with UTD develop

Duncanville students earn more than \$424,000 in engineering scholarships

BY TAMMY KUYKENDALL

Letter-signing ceremony. You hear the words and you may automatically think of a star high-school athlete who has just been accepted into a major university on a full scholarship. But this time the letter-signing ceremony isn't about athletes. It's a focus on academics and the Duncanville High School engineering and technician program.

Duncanville High School acknowledged 28 engineering students who have been accepted to attend major universities and colleges from across the state of Texas and Arkansas, and the U.S. Naval Academy in Annapolis May 3. During the letter-signing ceremony a total of \$424,600 in scholarship money was awarded to the 28 students to continue their study of engineering at the post-secondary level.

This year's letter-signing ceremony marks yet another year that the engineering and technician program at Duncanville High School has placed more than 80 percent of their graduating seniors into either major universities or technical colleges in the highly skilled area of engineering. When instructors Barton Burnett and Eric Manuel were asked about goals for placing next years graduating class, they said "Simple, next year we reach 100 percent."

This was the first year the University of Arkansas actively recruited Duncanville High School engineering students. Assistant dean for the College of Engineering Thomas Carter views Duncanville as a premier program.

for engineering education in U.S. high schools," Carter said. "What we found (at Duncanville) were stellar students from diverse cultural backgrounds, working together in a typical high school classroom ... on state of the art equipment, solving real world engineering problems."

Texas State Technical College in Waco signed the largest number of Duncanville students, a total of eight. Like the University of Arkansas, recruiters from Texas State Technical College are impressed with the quality students graduating from Duncanville.

"The students from Duncanville High School are well prepared," Sid LeNoir, EEC core instructor, said. "I have worked with Duncanville for over 13 years and the quality of the students has been high and is continually improving."

Duncanville High School implemented a pre-engineering course in the fall of 2005 in conjunction with its long standing and very successful electronics program. In only two years the pre-engineering program is already seen as a model for other Texas schools.

The students who received scholarships are Julie Devlin, Leonel Mendez, Jarian Miller, Daniel Brase, Jason Camero, Anny Lee, Chris Porter, David Corral, James Crutchfield, Zach Davis, Desmon Holbert, Isreal Ledzema, Miles Pitmon, John Paul Snipes, Sanchez William, Angela Chanthaphanh, Abraham Escoto, Milton Teal, Chase Truttlng, Yamid Barraza, James Parham, Justin Flowers, Rex Lam, Pablo Maldonado, Eric Essuman, Gerardo Fuentes, Nick Gunman and David Rico.

Tammy Kuykendall is director

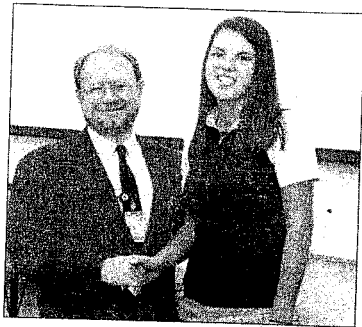


PHOTO SUBMITTED BY TAMMY KUYKENDALL
 Duncanville High School engineering and electronics instructor Barton Burnett, left, congratulates Julie Devlin for receiving a \$250,000 scholarship to attend the Annapolis U.S. Naval Academy this fall.



Duncanville High School graduate Chase Truttlng examines with pride a copy of the full engineering scholarship certificate presented to him by the University of Arkansas.



Duncanville High School graduate David Rico, left, is congratulated by Teresa Lvnd of the University of Texas

