

Robot Competition Builds Future Engineers and Scientists

BY CHERYL COBB AND SUSAN PALMER SLATTERY

It's a complex world, one whose future rests in the hands of those at home in the exciting worlds of engineering, science, and mathematics. Unfortunately, many students make it through middle school and high school with barely a glimpse of these worlds.

Alabama BEST (Boosting Engineering, Science, and Technology) provides middle and high school students with a peek into the world of robotics by linking educators with industry. The mission of BEST is to inspire and interest students to pursue careers in engineering, science, and technology.

If the excitement that filled Auburn University's Beard-Eaves Memorial Coliseum in Auburn, Alabama this past Fall is any indication, BEST is working – and working well. As the buses loaded with team members, mascots, pep bands, cheerleaders, and large groups of vocal supporters pulled up to the coliseum, it was clear that BEST is not your momma's science or math contest.

“In my opinion, BEST is the best thing that has come to education in Alabama in a very long time,” says Auburn High School science teacher Stan Arrington. “For an educational program to generate the same level of excitement as a sporting event is unheard of. This program does it.”

Teams from over 55 Alabama and Georgia schools had six weeks to design and build a remote controlled robot, to outperform others in head-to-head competition. The contest also contained a communications component that included the production of a web site, an information booth, a notebook, and an oral presentation;

for the purpose of elaborating on robot design, construction, fund-raising, and community outreach.

“We had so much fun working on this,” says Aaron Key, a junior from Homewood High School in Homewood, Alabama. “We started with lots of different ideas. We did a lot of problem solving and trial and error to identify the best ideas and ways to put them into practice. My experience with BEST has helped me realize that I want to study engineering or physics in college.”

And that’s just what BEST founders, Texas Instruments engineers Ted Mahler and Steve Marum, had in mind when they founded BEST ten years ago. While watching a video of students building a robot at a company engineering day, both were struck by how excited the students were. They approached corporate management with a proposal to start a local hands-on robotics program aimed at high school students.

Texas Instruments agreed to pilot the project. After learning about a similar fledgling program at Texas A&M, Mahler and Marum arranged a competition and BEST was born. By 2001, BEST had expanded to 20 regional competition hubs in eight states involving 400 teams and thousands of students. Alabama BEST is one of the newest and fastest growing hubs in the country.

“I was originally attracted to the program because it was hands on science,” says Robin Fenton, a teacher at Corpus Christi High School in Mobile. “We got that and much more. The program ended up involving students interested in writing and acting as well as engineering and the sciences. Since we’re a K-12 school, we even involved students in the primary grades — they made good luck posters and charms. This is the first time that we have ever had a pep rally for an academic competition. I’m hooked.”

The same can be said for the mentors — usually practicing or retired engineers and scientists — who volunteer their time to work with the student teams. According to George Blanks, BEST co-director and Director of Business and Engineering Continuing Education for Auburn’s Samuel Ginn College of Engineering, mentors are crucial to the success of BEST because secondary school students lack many of the technical skills required to construct a robot. However, with a little help and direction, they take off like a shot.

“I signed on to work with the Vestavia High School team,” says Erskine Vandegrift, retired engineer and, at 81, the oldest mentor for this year’s competition. “For the past six weeks, I felt as though I was 18 again!”

“Diversity is a big issue for engineering right now, as companies struggle to increase the numbers of minorities and women in their ranks,” he continues. “The mix of students I saw at BEST on the

competition floor was incredible. The chance to work with such a talented group of students was exciting and compelling.”

The students feel the same way about the mentors. Until becoming involved in the competition, many students had never met a practicing engineer.

“I really enjoyed the mentors that worked with us,” says Raja Rapaka, a student at Vestavia High School. “Mr. Vandegrift had tons of energy and helped us work through some tough problems. He got me excited about studying engineering. In fact, I’m considering Auburn because they offer a major in wireless engineering.”

Stanhope Elmore High School teacher Jennifer Cox believes that one of the reasons the competition is so successful is that it is set up to mirror a real-world engineering production project complete with limited resources (sponsor provided parts kit), a deadline (6 weeks), and tight specifications (size and weight limits).

“The real-world approach — from fund-raising to design to production to marketing to public relations — adds a great deal of excitement to the project,” says Cox.

It’s an excitement that Blanks and co-sponsor Mary-Lou Howard, Auburn’s College of Sciences and Mathematics Outreach Director, work hard to build on throughout the contest.

“It is our goal to demonstrate the excitement of advanced technical careers to young people as they make decisions on college plans and career choices,” says Howard. “The heart of BEST is the experience of solving a seemingly overwhelming task using simple scientific methods, project management skills, and old fashioned teamwork. We work hard to ensure that the students are having fun while they are learning.”

In 2002, that meant an eye-catching elevated game floor, designed and built by Auburn architecture students. Music, compliments of a local disc jockey, filled the coliseum as student volunteers from the Cupola Society — an engineering honor society — interacted with screaming fans in the stands.

“I work in a county school in rural Alabama,” says Gary Driver, teacher at Opp High School in Opp, Alabama. “This program is one of the best things we do. I have students who never considered college that are now talking about taking college prep classes.”

Driver is highly supportive of Auburn University and hopes that the school’s support for the project continues for a long time.

“I can’t think of a better activity for a University to be involved in,” he says. “BEST is a powerful learning tool. I can’t teach this in the classroom.”

Gail Morrow, Education Specialist, Technology Education for the Alabama State Department of Education, and a judge for this year’s BEST competition, agrees.

“BEST makes the connection between higher education and K - 12,” says Morrow. “This is exactly the type of program we’d like to see integrated into the curriculum.”

Blanks and Howard anticipate that by 2003, there will be six new competition sites in the southeast and that Auburn will become the site for a new, regional BEST competition called “The South’s BEST.”

Alabama BEST is hosted by Auburn University’s Samuel Ginn College of Engineering and College of Science and Mathematics. 2002 supporters included corporate sponsor Alabama Power/Southern Company, as well as Honda Manufacturing of Alabama, LLC, Mirant Services, Lowe’s Home Improvement Warehouse, Auburn University Outreach, Briggs and Stratton, and Rheem Manufacturing.

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