

Students compete in qualifying rocket competition

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More than a dozen students from the Endeavour engineering classes at Templeton High School and Templeton Middle School gathered on a baseball field at Vineyard Elementary School on March 21 to launch their Team America Rocketry Challenge rockets in hopes to qualify for the TARC national finals.

Jill Southern, who teaches sixth-grade math at TMS and engineering at THS, also conducts hands-on educational experiments and projects with 32 eighth through 10th-grade students through the Endeavour program.

The Endeavour program, which was founded seven years ago and involves the practical use of engineering, physics and mathematics, will eventually expand into a four-year high school program within Templeton Unified School District.

On March 21, the students launched their rockets after school while parents and teachers observed the proceedings, along with a National Association of Rocketry representative and a group of Cal Poly rocketry students. The classes formed three teams, one from the high school and two from the middle school, and planned a total of six to nine launches of three rockets, each one equipped with a parachute recovery system.

“The ultimate goal was to have each launch reach as close to 750 feet in height and remain aloft for as close to 45 seconds as possible,” said eighth-grader Billy Hurst. “Each rocket also contains two eggs that have to remain unbroken.”

Hurst and his partner, eighth-grader Larry Rose, modified their rocket for each



launch as they inched closer and closer to the ideal height and time aloft. They also equipped their rocket with a cardboard tube and Styrofoam to ensure that the eggs survived the journey skyward and returned back to Earth intact.

Rose, who plans to pursue a career as an explosives engineer or pyrotechnician, said the best part of the day was launching the rockets, including an early launch that reached 833 feet, a height differential that the team attempted to reduce with subsequent launches.

“Our first launch came down too fast so we had to put Styrofoam in the rocket to ensure that the eggs survive the launch,” Hurst said. “Our heights have been pretty good but we were over by almost 100 feet. If our rocket is too large, the weight will shift around. The next one is going to be a pretty launch. I don’t want this to go 1,000 feet in the air. If it’s too heavy, that thing is going to have a hard time getting off the ground.”

Hurst said the Endeavour students, who competed in last year’s national finals in Virginia, hadn’t calculated the wind speed properly and didn’t finish nearly as well as they had hoped. However, the students regrouped and hoped that the day’s launches on Friday would qualify them to compete in the national finals this year.

Eighth-grader Sam Youngdale said he was happy with his team’s two launches despite the losses of bottom and top pieces of the rocket at the time of the launch. His fellow team members included eighth-graders Chris Tapia, Jason Friedle, Mark Winter and Brennan Bilek.

Bilek, who plans to pursue a career in engineering or architecture, said the rocket went 630 feet in height and remained aloft for 48 seconds, missing its targeted height by 120 feet but coming close to the targeted time aloft within three seconds.

“I enjoyed the construction of the rockets and getting to watch what we have worked so hard to build,” he said. “We found that we needed a bigger arm piece and we needed to take off weight and secure fittings because they popped off when we launched the rocket.”

Ninth-grader Elizabeth McClure, who plans to pursue a career as a mechanical engineer, was the only girl among the participants in the day’s rocket launches but said that she enjoyed participating in the activity.

“I participated in last year’s launches when there was one other girl who participated,” she said. “I didn’t see any real difference from last year except that we were using better parts to build our rocket.”

Throughout the day, the rocketry students asked each other complicated

questions about wind speed, altimeters, projectile motion, parachutes and the weight and strength of the materials and gadgetry from which the rockets are made.

When a rocket returned safely to the ground, no one seemed happier or more full of pride in the ingenuity and innovation of her students than Southern.

"The fact that the eggs survived is pretty incredible," she said. "That's a physics lesson in and of itself."

When the rockets returned to Earth, many were caught in the branches of surrounding trees or landed in a clearing or on the nearby hillside below VES and were retrieved by the students.

"We wanted to follow the proper safety protocol for all of this and, at the same time, see engineering design being successfully implemented," Southern said. "Last year's launch resulted in students having an experience of a lifetime, traveling across the country to compete in the finals of the largest rocket contest in the world."

She said 700 high schools compete in the semifinals to become one of 100 high schools to qualify to compete in the TARC finals each year in Virginia. Astronaut Buzz Aldrin attended the event last year and, every year, the current secretary of defense is usually in attendance.

Southern said she is constantly recruiting students from the middle school and high school to attend the Endeavour classes and become a part of one of the rocketry teams. Many of her students have aspirations to study engineering, physics and mathematics in college and pursue careers in those fields, she said.

TMS principal Jon Lorimar also observed the rocket launches on Friday and lauded Southern's efforts to educate and instill enthusiasm for math and engineering in her students.

"They're awesome kids," he said. "This is a great learning experience for the students where they not only learn about rockets but also aerodynamics, mathematics and physics. They learn so much from both their successes and failures. Jill Southern is an amazing teacher who teaches sixth-grade mathematics and high school engineering and works with our Endeavour students out in the field as well as in the classroom. She nurtures her students through any math or engineering problem and helps them find solutions. She's an amazing individual and these students are great, too."

For information about sponsoring the local TARC team's trip to Virginia or supporting its ongoing educational projects, contact Southern at

JSouthern@tusdnet.net or mail checks made out to TMS Endeavour, c/o
Templeton Middle School to 925 Old County Road, Templeton, CA 93465.