



TIM LAMORTE/RIVERTOWNS ENTERPRISE

Third-graders Ryan Rende, Salvatore Raniolo, Ryan Levenson, and Taiga Niimura build a bridge.

Robotics Club connects with next generation

By Kris DiLorenzo

The noise level at Ardsley High School was so high on Oct. 18, it was hard to believe the 70 visiting elementary and middle school students were that excited about gravity, tensile strength, and electrical circuits.

That evening, the high school hosted Tech Night, an annual fundraiser now in its fourth year and sponsored by the 30-member Robotics Club. For \$20 admission, the visitors from Ardsley Middle School and Concord Road Elementary School participated in entertaining activities based on STEM subjects (science, technology,

engineering, and math).

Robotics Club president Isha Brahmbhatt, a junior at AHS, said the club presents Tech Night because "It's a great way to interact with the community and to share our passion for STEM subjects. Hopefully, one day some of these kids will join us."

She explained that funds raised are used to

buy "robo parts," and emphasized that club members aren't always holed up "in our caves," but also demonstrate robotics in other venues, and participate in competitions.

Peter Lee, who teaches an introduction to engineering design class, is the club's co-advisor

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Q. How can homeowners keep track of actual sale prices of homes in their

Tech night

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with Brandon Milonovich, who teaches math and computer science. Lee, like Brahmhbhatt, was enthusiastic about the evening's mission. "It's very good that we have this opportunity to work with kids," he said, adding that the proceeds from Tech Night exceeded \$1,000. "Robotics is an expensive endeavor using professional-quality equipment."

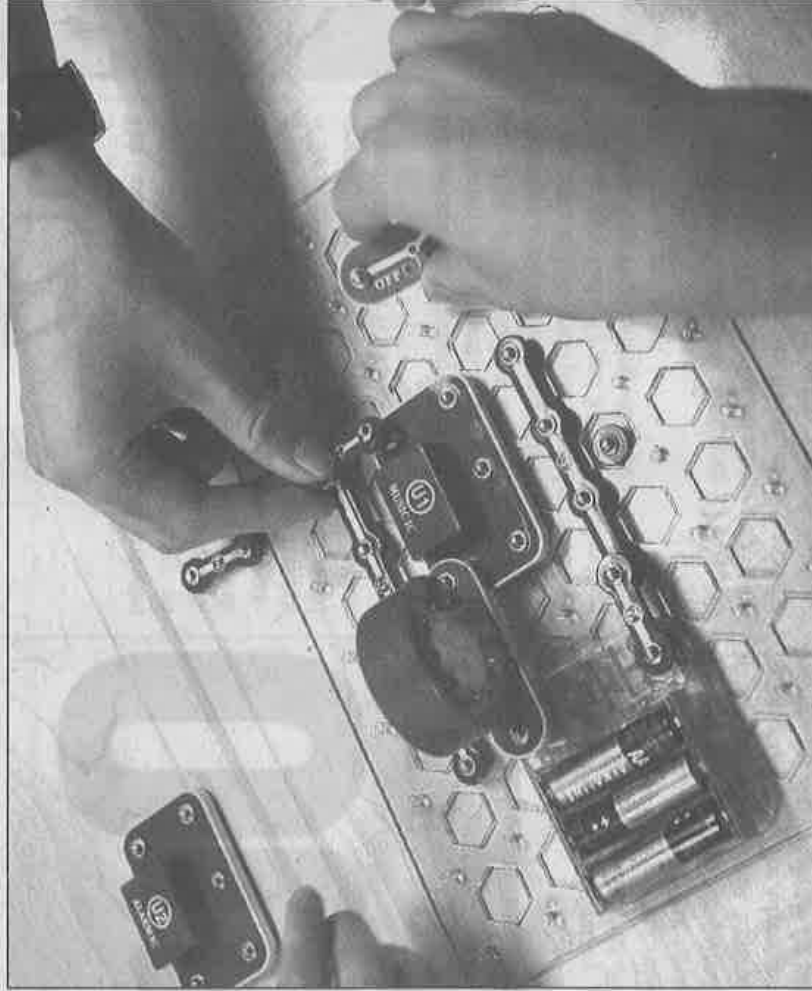
Lee also addressed the misconception that robotics means constructing versions of R2-D2, the character from "Star Wars": "Robotics has a few components. Programming, engineering, mechanics, and construction go into it. If you want to make something happen, you're using robotics, even just to operate an ice machine."

Club volunteers supervised five classrooms, channeling student enthusiasm into problem solving. First- and second-graders were tasked with rescuing "Pablo the Pompom" from a volcano, third- and fourth-graders with escaping a zombie apocalypse, and fifth-, sixth-, and seventh-graders providing energy to help a fictional hero battle a super-villain.

Pablo was literally a pompom, quarter-sized. Each student team was equipped with a Pablo, a "volcano" (a 3-foot-square flattened cardboard box), and five cardboard tubes (the inside of a paper towel roll) and duct tape to build a ramp to save Pablo.

A few cardboard rolls went airborne before the young engineers settled down to business, but the students soon were concentrating on taping the tubes to the cardboard in a pattern designed to help Pablo make it down the volcano's side. The trick, they discovered, was ensuring there were no gaps between tubes that Pablo could slip through and go tumbling down, or radical changes of direction that might trap Pablo in a juncture.

As the teams experimented, exclamations arose around the room: "Where did my pom-pom go? I lost my pompom!" "It might not



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Students construct a circuit.

work." "This is the good angle."

Eventually the students learned that the tubes had to be joined at gentle angles so that Pablo could slip down easily.

The third- and fourth-graders were faced with a Halloween scenario. Trick-or-treating, they found themselves in a cemetery, listening to screams. A pack of zombies is approaching, so the children flee up Secor Road — where the bridge has collapsed, leaving a pile of logs and bricks. In this class, the logs and bricks were toothpicks and marshmallow-shaped pieces of foam.

The students had to build a bridge sturdy enough to hold 10 friends. "You're going to learn to build the most efficient structure," a Robotics

made up of six squares, foam cubes connecting the toothpicks at each right angle. The bridge collapsed easily when weight was placed on top.

The teams set to work designing their bridges, building and ultimately testing them to see how much weight and force they could withstand.

The fifth-, sixth-, and seventh-graders tackled a task based on a familiar theme: a heroic character drawing on an energy source to battle an evil foe.

The students worked in teams named the Fortnite Gamers, Ninjas, Ninja Potatoes, and The Eagles. Their equipment: plastic circuit boards, two AA batteries, connectors (4-inch blue plastic rods encasing wires, with silver metal bumps on top acting as terminals), switches resembling those used for toy train sets, a small red light attached to the switch-plate, and 4-inch plastic fans.

A properly arranged circuit has all the rods snapped into place, connecting all the components. When a switch is flipped, electricity travels through the rods, lights up the bulb, and starts the fan whirling. Any gap between a rod and another rod or component will cause a short circuit.

Each team devised its own set-up, some more successfully than others. Sixth-grader Sahej Chadha, seventh-grader Jacob Goodman, and seventh-grader Maximus Grachan were the ambitious Fortnite Gamers.

"I made the circuit as complicated as possible," Grachan explained. "It has to have two switches, a light, fans, and two batteries. We had a second fan, but it broke."

Lee talked about the Robotics Club's next move: competitions, including those held by FIRST (For Inspiration and Recognition of Science and Technology), a STEM education organization that sponsors robotics, Lego, and technology competitions.

Brahmbhatt also is looking to the future — the near future. On Nov. 15 and Dec. 6, the Robotics Club is hosting two more Tech Nights.

Club member told them. "Now, what would cause your structure to break?"

A boy at the back of the classroom called out, "A tsunami!"

"We don't have tsunamis in Ardsley," the patient supervisor replied.

When one side of the classroom became too raucous, a quartet of girls at the front tried to calm down their classmates. "All right guys, focus!" one girl yelled.

One leader demonstrated force by leaning all his weight on the leader next to him, pushing him off-balance. They then explained that triangles are the strongest shape, and showed a model of an unsuccessful bridge: a double-decker rectangle