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Youngsters get robots rolling

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* Teams of young engineers impress with their scientific know-how, and their softball-sized machines.
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EAST PROVIDENCE - Whether your robot is preparing to cross a Martian crater 35 million miles away or a tabletop at arms' reach, the moment of truth jars the nerves of any engineer.

And so it was yesterday morning as little, red-haired Patrick Miller, who is 12, assumed a position strikingly similar to NASA engineers earlier this week: his weight teetering on the edge of his seat, hands pressed against his mouth, cheeks puffed with breath.

A few feet away, teammate Kaitlin Hebert, 13, wearing a matching white T-shirt emblazoned with "Thompson Middle School," centered their small rover onto a ramp on the table.

When the ramp dropped, the softball-sized robot was to roll down onto the 8-foot-long table resembling the cratered surface of Mars and perform a series of computer-programmed missions. The tasks ranged from maneuvering over obstacles to launching a plastic ball into the air. Teams could not use remote controls.

The ramp dropped.

The six members of the Thompson Warriors could do nothing now but watch.

And so were the judges.

More than 360 middle-school students from 19 communities, and their parents, crowded into East Providence High School yesterday for the third annual Rhode Island Robotics championships.

The championship is part of and is sponsored by the First Lego **League**, one of the largest science competitions in the country. It is named for Lego toys. "First" stands for First in Recognition of Science and Technology, a nonprofit group that promotes interest in technology.

The competition helps teach children skills in computer-programming, engineering and teamwork. It also creates challenges that the children never see coming, says Rebekah Gendron, a Riverside Middle School robotics teacher, this year's tournament director and coach of two teams.

"Nothing ever goes strictly as planned," she says.

Take, for example, early yesterday morning, when one of her teams, the Mars Marines, from Riverside, became upset when they discovered their rover had been damaged.

"Mrs. Gendron, someone has sabotaged our robot," one of the team members complained.

Actually, an arm broke off as Gendron was unpacking her van.

"I told them, 'You're smart kids. You're problem solvers. Go fix it.' And they did."

The year's Mars rover theme was chosen to coincide with NASA's real drama now taking place on the red planet.

Starting in September, teams ranging in size from 5 to 10 members designed, programmed and built robots to complete the various tasks. Lego provided the "RCX Brick," the robotic engine that the students worked from.

The students were judged not only on how well their robots performed on the table, but on how well they presented their engineering ideas and Mars research projects to small teams of judges. The judges were professional engineers, computer programmers and professors who had volunteered their time.

THE **FIRST** ROUND of the table competition didn't go as smoothly as the Thompson Warriors had hoped.

The rover negotiated the ramp nicely, and its small attached "broom" designed by 15-year-old Chris Hughes, perfectly swept a small table clean of Lego pieces as it passed. But the plastic ball that the rover carried fell off before it got to the launcher.

And there were other problems that only the skilled eye of an engineer could pick up on.

"The V module wasn't working," Patrick Miller tried to explain. "I don't understand why. It worked fine yesterday."

Right.

The team retreated into "The Pit," otherwise known as the school cafeteria, where teams worked on their robots and waited to be called into smaller rooms to present their research and computer-programming knowledge to the judges.

As the Thompson Warriors waited, teammate Seth Maynard flipped open his cellular phone. It began playing music. The team formed a small circle and started dancing.

So much for nervousness.

Their coach interrupted their fun.

"You got 15 minutes," technology teacher Roland Hebert (no relation to Kaitlin Hebert) told them. "If you want

to work on your computers, you can."

Last September, Hebert fell off his bicycle, fracturing three ribs and compressing two vertebrae. He has not yet made it back to school, but he couldn't miss the competition. He got a ride in.

The robot competition is a great program, he said.

"It teaches teamwork, researching skills and shows them how to combine those skills with computer and engineering skills."

You can craft a great computer program, he says, but if you don't know how to build the robot, those computer skills are for naught.

IN THEIR MARS research presentation, the Thompson Warriors exude confidence and knowledge before the two-judge panel, providing research evidence that humans could possibly live on Mars if they took steps to neutralize its poisonous atmosphere.

Seth Maynard comes to the aid of Kaitlin Hebert when she temporarily forgets where the recently lost Martian probe originated from.

"From England," he says. "They think it fell into a crater, which is why they couldn't make communication."

"Wow," says one of the judges. "I've learned things I didn't know."

What did the team use for resources, the other judge wants to know.

"The Internet," says Seth. "Tons and tons of stuff."

The team's engineering presentation, held under the basketball hoop in a small gym, seems to go equally well.

The judges seem impressed to learn that the team used both a timing sensor and a wheel-rotation counter to choreograph the journey across the table.

Though the presentation again fails to get the plastic ball launched into the air the day's troubling sticking point the judges are supportive and encouraging.

It is almost 11:30 a.m. by the time the team leaves the gym. They face two more rounds of table competition and hours before one team is named winner of the prestigious Director's Award.

Talk turns from sensors and computer bytes to McDonald's Chicken McNuggets.

"You know," says Patrick Miller, "I can live off their 99-cent menu."

The eventual winner yesterday was Gaudet Middle School from Middletown.

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TEAMWORK: Kaitlin Hebert, 13, of the Thompson Middle School in Newport, guides her team's robot yesterday.

* * *

GAME FACE: Drewe Carlson, 13, of Thompson Middle School in Newport, watches his team's robot maneuver at the state robotics competition, yesterday at East Providence High School.

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