

## Engineering a change in the classroom

by Dawn Lim



Doctoral engineering fellow Carroll Chen teams up with Ryan Cain from P.S. 3 Bedford Village to devise a classroom plan on renewable energy that will incorporate robots. Yvon Morin addressed his students at It Takes A Village Academy and told them the task at hand: design a robot that would pick up a ball and toss it into a goal.

They stared back incredulously.



The high school in East Flatbush, which opened in 2007 with a 9th grade and is growing by a grade per year, is largely made up of Haitian immigrants who are learning English.

“They didn’t think it was feasible,” he said.

But a fellow at the Polytechnic Institute of New York University worked with Morin to design

and conduct classes. His students created a robot. Then, they pitted it against other schools at a national competition.

“The largest barrier my students face is English, but they’re good at using their hands. This was a good experience for them,” said Morin. “They were sad when it was over.”

Morin’s students were part of a National Science Foundation-funded program that pairs up doctoral engineering fellows at the Polytechnic Institute of New York University in classrooms with teachers in Central Brooklyn.

The \$4.2 million program gives 14 fellows the tools to help about 1,000 students from 18 schools, many of which have been chosen because they have been designated as “at-risk” and economically disadvantaged institutions.

About 85 percent of students in these schools are underrepresented minorities, and many of their teachers are African-Americans, said Vikram Kapila, the associate professor of mechanical engineering at NYU-Poly and the driving force behind the program.

The program shines a torch on computer sciences and robotics as possible career path for students.

“Kids will want to play with something different and press buttons,” Kapila said, “But we want them to ask questions like, ‘how is it that it turns left when we press this button?’”

It also forces graduate students out of “lab-speak” and makes them translate intricate engineering concepts into accessible language.

The hardest thing that Peter Baker, a graduate fellow, had to deal with in the classroom? “Kids sticking pencils in other kids’ ears,” he said at last week’s training session, while fiddling with a robot that would detect magnetic fields around objects and help users infer what elements they are made of.

“At least you didn’t get kids chewing on Lego parts on machines,” chimed in Carroll Chen, another fellow. Chen was working with P.S. 3 Bedford Village schoolteacher Ryan Cain to build a Lego model water wheel that could generate renewable energy and light up a bulb.

“Lego is very exciting for students,” said Cain, who was dressed in a shirt that read “MORE BIKE LANES.” “Sometimes you have to make sure they’re actually doing what you want them to do.”

Eighty percent of 810 students who participated in this program in the spring semester saw their math and science grades jump by at least half a letter grade.

“We’ve got Hispanic, Asian-American, Caribbean-American fellows - it’s your everyday New York City community,” said Kapila, who hopes this program will give students more role models in the field of science and technology.