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Tuesday, 20 November 2012 18:16

Computer programmer is teaching fourth-graders the skills of his trade

Kids love playing with Legos. Fourth-graders at Cedar Grove-Belgium Elementary School are taking the popular toy to another level, learning to write software programs that prompt their plastic creations to move, make noise and respond to sensors.

Lego Robotics is being taught by computer software engineer David Bakkom of the Town of Holland. The class meets from 3:15 to 5 p.m. Tuesdays for 10 weeks at the Cedar Grove Library. Next week is their last class.

Students rarely miss a class and have to be dragged away if they must leave early.

“It’s controlled chaos,” Bakkom said as he tried to keep the noise level of excited students to a low pitch last week.

The students work in pairs to build and program a robot. Sometimes, they all make the same robot, which Bakkom said allows him to teach the finer points of programming.

Last week, each team chose a different robot to build, with Bakkom troubleshooting problems and challenging them to be more creative in their programs.

He gets help from seventh-graders Jacob Ferber, Brandon Wieberdink and Ryan Woner and eighth-grader Tim Zazyk, who advise the younger students.
They also created a more advanced Legos robot, which they programmed to respond to sounds, such as whistling and clapping.

The fourth-graders were to fine-tune their robotics this week and work on presentations they will give to classmates.

“We’ll come in with the computers and robotics and they will get a chance to show off and explain it,” Bakkom said.

“One of the problems with engineers is they are terrible communicators, and this will help them communicate better.”

Poor communication may be true of a lot of engineers, but not of Bakkom, who has no trouble

connecting with students and getting them enthused about learning.

Bakkom read about the Legos Robotics program and decided that would be a fun project to do with fourth-graders. He learned Sheboygan County 4-H had computers and Legos robotic kits. Bakkom became a 4-H leader so he could use the equipment and teach the class.

“I heard about this and thought it would be a cool thing for kids to play with Legos and learn a little programming,” Bakkom said. “It’s been fun trying to keep coming up with fresh ideas to keep them challenged.

“It’s a bunch of work, but it’s a kick, and the kids really enjoy it.”

The students were recommended by their teachers for the after-school activity.

“I’m very happy we have three girls,” Bakkom said. “I’m thinking of having a mini three-week class for girls only.”

Two girls, Ellie Dirkse and Emma Daniels, are working together on a soccer fans robotics which has two fans that move up and down, spin around, cheer and clap.

Sara Burns is working with Wesley Reichle on a lion that roars and pounces up and down. Sara prefers building the robot and lets Wesley devise the program.

Zeb Olmstead and Nathan Walich are making a crane that lifts things, while Cody Golownia is programming a Martian robot to run.

To go with the girls’ soccer fans, Ty Weiland and Jonah Heisler made a goalie and Hugh Gillette and Cole Augustiniak created a kicker that tries to score a goal off the goalie.

After a critique by Bakkom, the goalie creators decided to change their program to be less predictable and better able to stop the soccer balls.

In addition to teaching computer programming, Bakkom emphasizes teamwork and all students taking leadership roles.

“I am really working on balancing the Wild West, solo fighter pilot, lead-the-pack-no-matter-what mentality with cooperation, teamwork and generosity,” he said.

“So much of our culture is about winning and getting ahead. I’m encouraging the leaders to switch seats and become a coach for their building and

programming partner. It's hard for the natural, gung-ho leaders to morph into a coach, but it's also really important."

The robotics class grew out of Bakkom's commitment to students, particularly fourth-graders, during the regular school day.

Bakkom has been tutoring students in Sara Kluck's fourth-grade classroom for four years. Some need extra help, some need a friend and some need more challenges.

This year, he works with one student who needs extra help twice a week for about 20 minutes each day, works with a fourth-grade math whiz on higher-level problems and puzzles for 15 minutes twice a week and works with an advanced reading class during the school's prevention, intervention and enrichment program for a half hour twice a week.

"David is one of a kind," Kluck said. "He not only is an extra pair of hands in the classroom, but he really goes above and beyond to challenge students. And the kids love him. Their faces just light up when he comes into the room each day. He really makes learning fun for these kids and has a great rapport with all students."

The way Bakkom shares his real world experience with the students is invaluable, Principal Craig Gunderson said.

"We are so fortunate that he is willing to volunteer at our school and we appreciate all of his contributions," Gunerson said. "Mr. Bakkom is the kind of man that students will fondly remember long after they have moved beyond the elementary school level."

Image Information: COMPUTER PROGRAMMER David Bakkom helped Ellie Dirkse with the program for a soccer fans robot, while her partner Emma Daniels and classmates Hugh Gillette and Cole Augustiniak watched. Photo by Sam Arendt