

Critical math

Calgary school finds unique way to pique students' interest in tough subject

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It's rare for any young student to jump for joy when it's time for math class.

But at the Calgary Jewish Academy (CJA), students aren't just excited for math — they're excelling at it.

For all those teachers pulling their hair and parents throttling tutors, the secret is simple: Robots.

"It's awesome," Grade 5 CJA student Soly Spivak said as he watched his Lego robot weave its way around the classroom.

"We program it, and I can make it move from here to here. It's easy."

But what do robots have to do with math?

CJA science teacher Jeff Warner was one of the visionaries behind the Robotics Centre of Excellence, a brand-new program that incorporates STEM education (science, technology, engineering and math) into the school's daily curriculum.

Starting as early as Kindergarten, students are getting hands-on experience building robots, and more importantly, learning how to code them.

"The idea is to engage kids in learning specifically about robotics with a focus on programming," Warner said.

"Coding is very much a growing trend in education — it's a skill of the future."

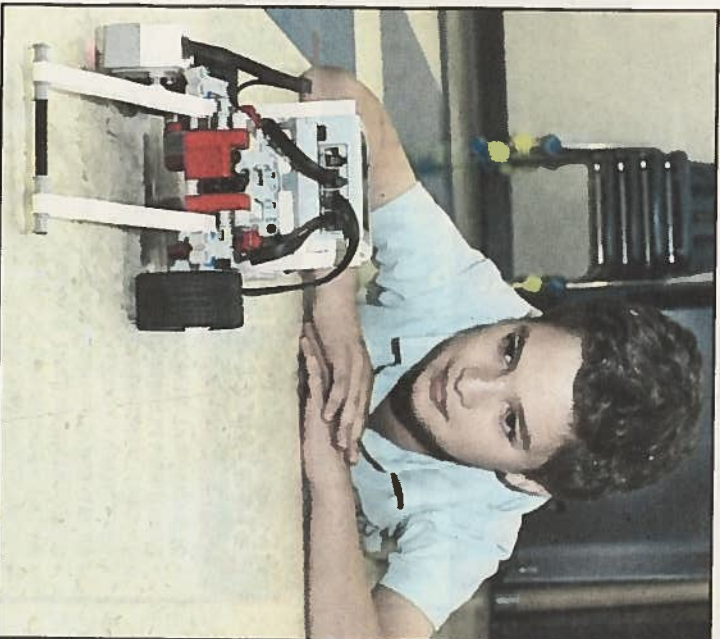
When we hear the word coding, our minds often jump to servants or Hollywood hackers. But Warner said programming is a lot simpler than it's made out to be.

"Programming is actually a ton of fun," he said.

"And it's really good for the brain because it's just the pure distillation of logical problem solving."

Now with education sets like Lego Mindstorm and WeDo, it's possible for kids as young as five to start understanding traditionally tougher subjects like math through basic computer programming.

"One of our goals with math is to make it practical," Warner said.



ANNA BROOKS/POSTMEDIA

Grade 5 CJA student Soly Spivak watches his programmed robot navigate around the school's new Robotics Centre.

"I give the students a robot and a mission, and they literally can't solve the problem unless they work out certain numbers."

Not only does working with robots and coding give math a more utilitarian purpose for students, it also has kids problem-solving collaboratively and learning spatial-kinetic reasoning.

"Math often ends up being a solo pursuit," Warner said.

"Especially at the elementary level, the temptation is to teach kids just to memorize math."

"This approach introduces a back and forth dynamic. They're sharing and talking through it," he added. "Math becomes a team project."

CJA principal Brenda English said both the Robotics Centre of Excellence and the afterschool robotics club are working towards Alberta Education goals to incorporate coding into school curriculums.

"We've looked at what are life worthy skills, and we all know robotics is behind so

much of what we do," English said.

"For us as a school, it's a good connection piece for our kids in terms of what the reality of future job markets are."

And it's not just math and science classes Warner is applying robotics to.

He said he's even working with humanities teachers to find practical ways to use robotics as a teaching tool.

A recent study for an English class had students building self-aware robots capable of targeting another, resulting in an ethical discussion among students around military uses of robots and how they can be used for harm.

While the concepts of robotics and coding are still new to CJA, already the robotics club is working closely with Warner to compete in their first Lego League competition in January.

"The kids are really embracing it," principal English said.

It has become an integral part of learning, and it's something all students should have opportunity to do."