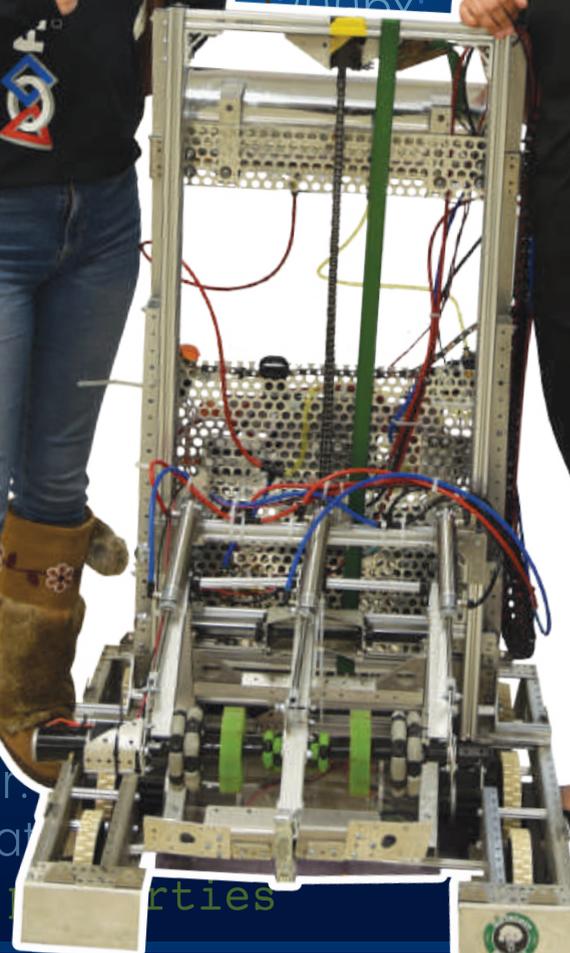
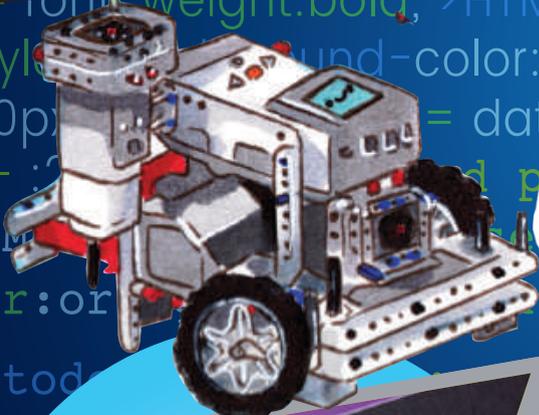
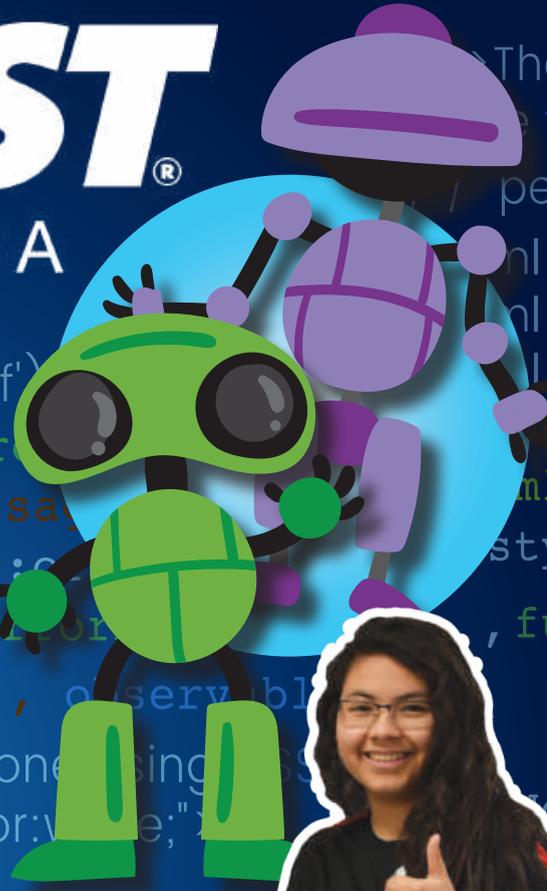




FIRST[®]

CANADA

IMAGINE THE POSSIBLE
CODE YOUR
FUTURE



<CanCODE>
<CODECan>

FOR INSPIRATION & RECOGNITION OF SCIENCE & TECHNOLOGY

Hello Budding Coders & Tech Innovators!

We are here to get you thinking about all that's possible by learning how to code. Hint: Very big things! Thanks to the Canadian Government's CanCode program, *FIRST* Robotics Canada is engaging more kids and youth in coding and technology, and presenting the amazing opportunities that go along with it— and that includes entrepreneurship and Canadian innovation! By trying to solve big and small problems, innovative entrepreneurs have the potential to transform the world and make a real difference in our communities.

In this tech-rific magazine, you'll learn what it takes to be an entrepreneur and meet superstars like 15-year-old Zaynah, a leader in artificial and virtual reality. You'll be introduced to cool Canadian tech startups working to make a difference for honey bees, whales and the environment. So much to talk about, so many possibilities to imagine. So, let's get started!

If you're interested in learning more about how coding and programming is used in the *FIRST* Robotics Canada programs, visit firstroboticscanada.org/cancode. Turn the page to find your future in code.



Kim

Kim Cooper
Vice President, Partnerships
FIRST Robotics Canada

TABLE OF CONTENTS

- 2 Editor's Letter
- 4 Talking Tech
- 6 Cool Canadian Startups
- 8 Zaynah Bhanji
- 10 Indigenous Retreat
- 12 Meet Jeff Ward
- 14 First Nations Robotics
- 16 Minds for STEM
- 18 Kyla Bolden
- 20 STEM Kids
- 22 Hello World





CODING IS COOL



Robots have been cool since the 90s! That's right, back in the early 1990s, Mark Breadner, now President at *FIRST* Robotics Canada, brought the now-famous robotics program here to Canada. What

happened after that? Pure magic! Coding and robotics gained popularity and next thing you know, kids and youth across Canada were making 'bots move!

What does Mark think of it all now? "I'm absolutely thrilled to have experienced first-hand how *FIRST* Canada has grown. Every day, I'm blown away by the commitment, dedication, and enthusiasm from our volunteers, students, teachers, and staff! We're definitely more than robots."

TRIBUTE TO WOODIE

The *FIRST* community was devastated by the passing of Dr. Woodie Flowers who inspired all of us at *FIRST*. Victoria Angelini, otherwise known as @FRCDoodles created a tribute to Woodie—doodle-style. Check it out below! We thank Woodie for his legendary inspiration and gracious professionalism.

What is the story of @FRCDoodles? The first FRC Doodle (6878) was conceived in the Subway sandwich shop across from the Ryerson venue, when a friend of Victoria said that the idea of personified FRC teams would be "weird." (Of course, then she had to draw one up!).

What does Victoria think of STEM and the arts? She says: "STEM and the arts cross paths all the time, whether it be in architecture, drafting, computer animation... the list goes on! I don't think being artistic and being into STEM are mutually exclusive by any means."



Talking TECH

Dig into the details about tech startups and talk tech today!



1 Did you know Toronto is one of the best tech hubs in the world? Vancouver is one of the fastest growing virtual reality, augmented reality hubs, and Montreal is one of the best tech cities in the world to live in. Go, Canada!

2 What's a tech hub?

Good question! A tech hub is a place where everything a tech startup needs comes together. Like tech experts, lightning fast internet, gadgets and funders to help get a startup up and running.

3 One of the best-known tech hubs in the world is Silicon Valley, California. That's where some of the world's biggest tech companies like Facebook, Apple, Netflix, and Tesla, all call home.

COOL CANADIAN STARTUPS

Let's take a look at some of the tech-tastic work being done by startups and entrepreneurs right here, right now in Canada! These six tech companies are just a few examples of how innovators are using tech to imagine a better future.



- 1** **NAME:** Nectar Technologies
WHERE: Montreal, QC
LAUNCHED: 2016

Are you worried about the declining honeybee population? So are co-founders Marc-André Roberge and Xavier de Brey. That's why they founded Nectar: to give honeybees a voice. Using artificial intelligence and connected devices to monitor things like humidity and temperature inside a hive, Nectar helps beekeepers know if their hives and queen bees are healthy. With greater, more accurate data, beekeepers can make better decisions and keep their honeybees buzzing for years to come.

- 2** **NAME:** Animikii Indigenous Technologies
WHERE: Victoria, BC
LAUNCHED: 2003



Read more about Jeff Ward on page 12!

Founded by Jeff Ward, Animikii Indigenous Technologies is an Indigenous-owned digital agency with specialties in website design, custom software, design & branding, and digital communications. Their exciting and creative work includes building web platforms for The Grizzlies, a movie based on the inspiring true life story of a group of Inuit students. When the sport of lacrosse is introduced to their tiny town in Nunavut, their lives and community are transformed.

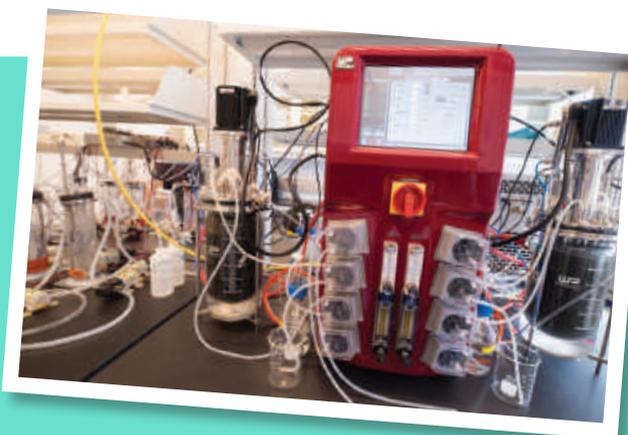
- 3** **NAME:** Kinova
WHERE: Boisbriand, QC
LAUNCHED: 2006

Charles Deguire, co-founder and CEO of Kinova, grew up with three uncles living with muscular dystrophy, a rare and difficult disease that weakens the body's muscles. One of these uncles, Jacques, was an inventor confined to a wheelchair who built himself a robotic arm made out of hot dog pinchers, microswitches, and electronics! So inspired by how technologies improved his uncles' lives, Charles made it his mission to help others through robotics. Eventually, with co-founder Louis-Joseph L'Écuyer, the two budding engineers developed JACO, an assistive robotic arm with a three-fingered hand. That became the start of this now international robotics company.



4 **NAME:** Ashored
WHERE: Halifax, NS
LAUNCHED: 2018

Do you love whales? Are you worried about their future? So is the team at Ashored. This growing start-up uses machine learning, sonar and geo-tracking technology to help commercial fisheries—an important livelihood in the Maritimes and around the world—become more sustainable. This technology will help make less of an impact on marine life and the environment. For example, they've developed ropeless fishing buoys to prevent endangered North Atlantic right whales, one of the most endangered of the large whales, from getting entangled.



5 **NAME:** Genecis Bioindustries Inc.
WHERE: Toronto, ON
LAUNCHED: 2016

From a young age, Luna Yu, CEO of Genecis, was taught by her grandparents to never waste food. That lesson sparked Genecis, a startup which takes organic waste—things like banana peels, apple cores, coffee grinds—and turns it into PHAs, a fully biodegradable form of plastic. Unlike synthetic plastics which can take hundreds of years to breakdown, PHAs need only need two to 12 months! Through biotechnology, engineering and machine learning (the very cool area of artificial intelligence which analyzes data to create computer programs), Genecis is playing their part to make our planet greener!

6 **NAME:** Resson
WHERE: Fredericton, NB
LAUNCHED: 2013

If we asked you to name a farmer's skills and tools of the trade, would you include engineering, computer science and robotics? That's exactly what co-founders Peter Goggin and Rishin Behl used to develop solutions to help farmers better confront the challenges of pests, disease, and erratic weather. Using data from satellite, drone imagery, cameras and in-field sensors, Resson helps farmers know what's happening in every part of their farm. If a pest or disease can be located faster and more accurately, a farmer can respond more quickly and accurately. That's better for the environment and less costly for the farmer!





Meet

ZAYNAH
BHANJI

Innovator and Changemaker

CANADIAN CODER USING TECHNOLOGY FOR THE GOOD

Zaynah is a 15-year-old machine learning and virtual & augmented reality developer. She started on a *FIRST LEGO*® League team when she was in grade 7 and was the team leader in grade 8. She continued her journey developing neural networks at only 13 years old and has had her projects supported by companies like Google and Microsoft. Zaynah is an advocate for women in technology and often speaks to girls to inspire them in their science and technology journeys. *FIRST Robotics Canada* had a chance to talk to Zaynah about her experience.

FIRST CANADA (FC): YOU'RE A MACHINE LEARNING ENTHUSIAST, AS WELL AS AN EXPERT IN VIRTUAL AND AUGMENTED REALITY AND AI. HOW DO YOU REFER TO YOURSELF AND WHY?

ZAYNAH BHANJI (ZB): I think of myself as a learner. I am passionate about exponential technologies like artificial intelligence, and virtual and augmented reality. I'm constantly learning and expanding my knowledge of the world.

FC: HOW HAS CODING PLAYED A ROLE IN YOUR SUCCESS?

ZB: Coding has helped me explore technologies and create things that I am passionate about (virtual reality experiences, neural networks, applications for various companies). Learning to code has given me a foundation that I can

use in any technology-related task, and it has helped me gain opportunities to work with big companies including CIBC, TD, and Google.

FC: HOW DID YOU BEGIN DEVELOPING NEURAL NETWORKS AT 13 YEARS OLD?

ZB: I joined a program called The Knowledge Society (TKS), a human accelerator designed to help high school students achieve big goals in technology and have an impact on the world. TKS exposes students to new technologies such as artificial intelligence, blockchain, quantum computing, nanotechnology, and so much more. Through TKS, I got exposed to artificial intelligence and learned about neural networks, which is the backend of how an AI algorithm works.

FC: WHAT DOES IT MEAN TO DEVELOP NEURAL NETWORKS?

ZB: Artificial neural networks are computing systems that are inspired by the biological neural networks that human and animal brains have. A neural network is a framework that allows many different AI algorithms to work.

FC: WHERE DO YOU SEE OPPORTUNITIES FOR THE NEXT GENERATION OF TECH INNOVATORS?

ZB: The reason we have created technology is to solve problems, and there are so many huge problems in our world that need to be solved in industries like healthcare, agriculture, finance, and many more. Anyone can come up with an idea and execute it and have a huge effect on any industry and any problem and create a difference. If there is something that you are interested in, pursue it because there might be a huge opportunity waiting to be explored.

FC: HOW CAN TECHNOLOGY BE USED FOR GOOD?

ZB: We can use artificial intelligence, for example, to diagnose patients' illnesses a lot quicker, and optimize the amount of crops that are used for growing food. There are so many different ways technology can be used for good and it is up to us to make sure that happens.

“Coding has played a huge role in my success.”

VISIT THEKSOCIETY.COM TO FIND OUT MORE ABOUT THE KNOWLEDGE SOCIETY (TKS)

ZAYNAH'S TIPS FOR KICK-STARTING YOUR IDEAS INTO ACTION

- 1** Go for it. If you have an idea and you would love to turn it into a company, just do it! Create a website, start talking to people doing similar things, and set the vision for what you want to do.
- 2** Have 3-5 mentors. Mentors provide key roles in helping you grow as a person, as well as providing advice on your company. I recommend finding mentors with a lot of experience in different areas that relate to a company, for example, one mentor could help you with the development of the product, one could help you with the finances, one could help you with the sales, and so on.
- 3** Anyone can come up with an idea, execute it and have a huge effect on solving a problem and making a difference.



Indigenization 2019

Lessons from Indigenous Elders, Knowledge Keepers and Digital Educators



Elder Jeff Monague is a member of the Beausoleil First Nation on Christian Island, who shared teachings about the reclamation, preservation and reverence of Indigenous languages, traditions, sacred items and lands.

FIRST Canada Staffer, Annika Pint, attended a special gathering of Digital Educators working in Indigenous communities, hosted by the organization Elephant Thoughts. Through participation in a series of workshops, facilitated by Indigenous speakers, Knowledge Keepers and digital professionals, Annika learned about the intersection between Indigenous traditions and technology. She also learned ways in which Indigenous communities are adapting and using technology to innovate, create and share traditional knowledge.



Annika with Little Bear. One of the elders at the workshop.



ABOVE: John Corbett is a professional computer programmer and Canadian Metis media artist who shared teachings about an Indigenous computing framework that favours cultural practices over efficiency and reflects Indigenous language, culture and worldviews.



ABOVE: Annika is greeted by Lisa Farano, Co-Creator of Elephant Thoughts, a registered charity also supported by CanCode and the host of the gathering!

RIGHT: Digital educators from organizations across Canada, including Imaginative, TakingITGlobal, MindFuel, SaskCode, Canada Learning Code, Indspire and Let's Talk Science, had the opportunity to learn with and from one another about the programs and practices made possible due to the generous support of the CanCode program.



Meet JEFF WARD

Indigenous Technologist and founder of Animikii Inc.

Jeff Ward's parents wanted him to become a doctor. But Jeff was more interested in coding and entrepreneurship. By the end of high school, Jeff was running his own business! Now, as a founder and co-founder of multiple startups, Jeff proudly identifies as an Indigenous technologist, family-oriented geek, web entrepreneur, and dad. We had a chance to talk to Jeff about his interest in coding and company Animikii.



Q1: AS A KID, WHAT MADE YOU INTERESTED IN CODING?

JW: I had older brothers show me how to tell the computer what to do with code. Then I practiced in the computer lab and showed my classmates what I could do.

Q2: AT WHAT AGE DID YOU BECOME INTERESTED IN ENTREPRENEURSHIP AND WHY?

JW: I was probably 11 or 12 when I became interested in business. I remember starting a car wash with my friends and charging people money to wash their car. When I was a little older, I learned how to code websites and started my first business making websites.

Q3: WHAT DO YOU THINK IS IMPORTANT TO REALIZE ABOUT INDIGENOUS PEOPLES AND ENTREPRENEURSHIP?

JW: Indigenous Peoples have always been entrepreneurs. We have to remember that this country, Canada, was founded on a business relationship between Indigenous Peoples and settlers.

Q4: YOUR GOAL IS TO ENCOURAGE INDIGENOUS YOUTH TO CHOOSE TECHNOLOGY. CAN YOU EXPLAIN WHY?

JW: Indigenous voices have been forced out and left out of many conversations, spaces, places and industries and that includes technology. Indigenous people have always been inventors, entrepreneurs and technologists. We have always had a lot to offer the world of technology and innovation, so why not coding as well?

Q5: HOW DOES IDENTIFYING AS A PROUD INDIGENOUS MAN INFORM YOUR ENTREPRENEURIAL VENTURES?

JW: Everything that I do in business is rooted in the Indigenous values. It is good to worry about financial success of your company, but you also need to consider the impact it has on your family, community, and the world. It is important to value more than just money in your business and give back as much as you can.

Q6. WHAT IS THE MOST REWARDING THING ABOUT BEING AN ENTREPRENEUR?

JW: Being an entrepreneur is a very creative endeavour and not always just in numbers, code and math. It is rewarding to create something out of nothing. When you can envision something and then create it and then have somebody see enough value to exchange something (i.e. money) for that value, it is very rewarding.

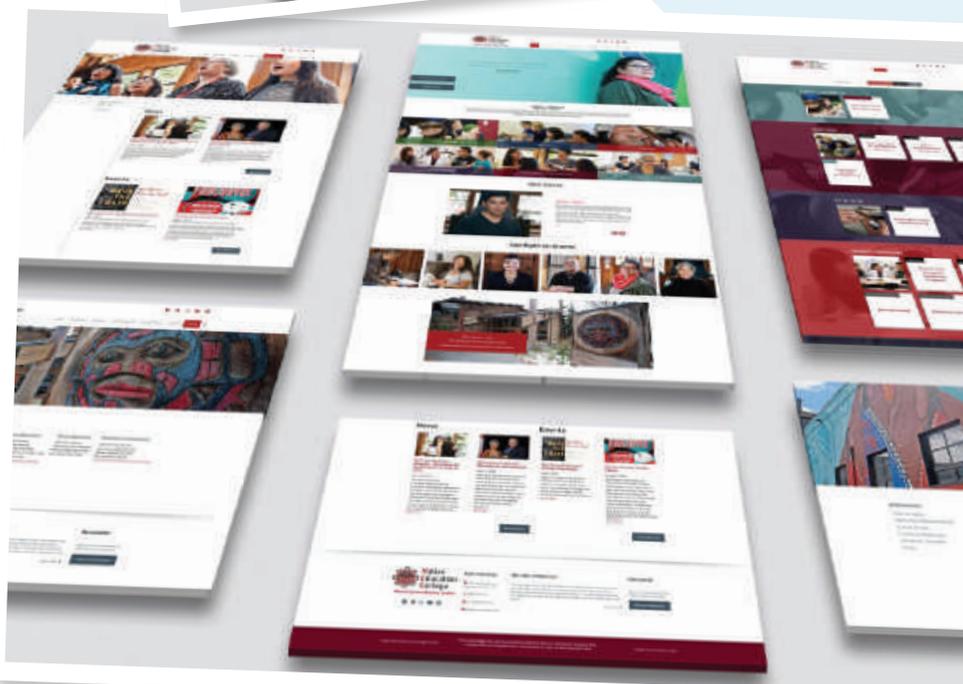
Q7: WHAT IS THE MOST CHALLENGING PART OF BEING AN ENTREPRENEUR?

JW: The most challenging thing for me is to find a balance between home life and work life. When you are so passionate about your business, it is easy to spend all

your waking hours on it but it is important to spend time with your family, friends and your community because that is where you get your energy to invest into your business.

Q8: WHERE DO YOU SEE FUTURE OPPORTUNITIES FOR THE NEXT GENERATION OF TECH INNOVATORS?

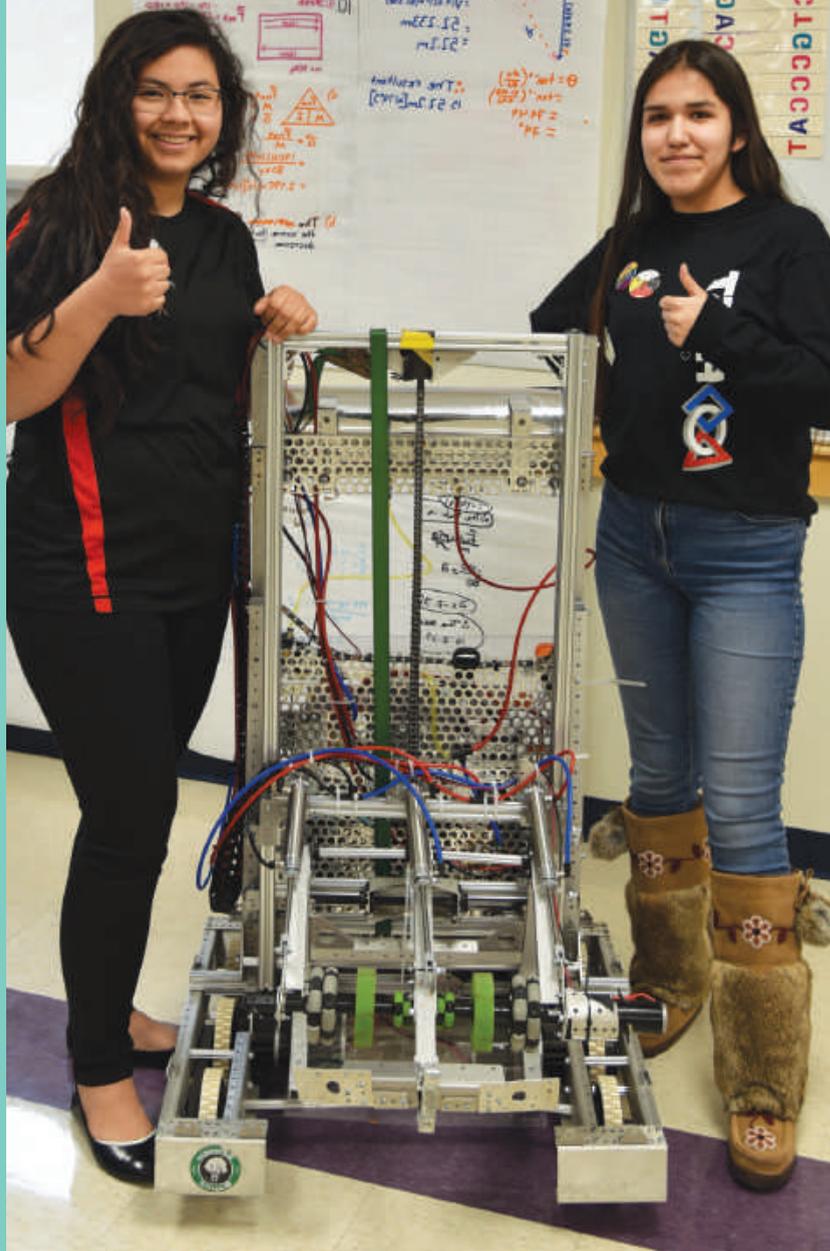
JW: It is always good to learn the fundamentals of coding because you can use that in any programming language. But for future tech innovators, I would recommend learning how to program for any new device that comes out. It was not that long ago that the iPhone was invented and now there are programmers all around the world making a good living programming apps. What is the next big invention that you can code on? Keep an eye out for the up and coming devices and platforms!



Meet
**AARYN
 ZOCCOLE
 AND MARY
 PANGOWISH**

From *FIRST* Robotics Team 5672 in Manitoulin Island, Ontario.

FIRST NATIONS ROBOTICS



AARYN SAYS...

Q1. WHY DID YOU GET INVOLVED ON A ROBOTICS TEAM?

AZ: My mom forced me to!

It took me a while to get really involved with the robotics team because I was so quiet and hesitant. In my grade 10 year, I made posters and I had more of a graphics design role. I believe I stayed on the team because I was raised to never give up on the things you believe in: this team is an exceptional example that surpasses what I thought was possible for First Nations youth. In my grade 11 year, I was still nervous, but I took on the Chairman's Award with our team captain Mary. This year I plan to go all in!

Q2. WHAT IS YOUR HOPE FOR OTHER FIRST NATIONS YOUTH?

AZ: My hope is to get STEM programs (such as *FIRST*) on First Nations Reserves and for First Nations youth to attend universities in STEM programs across Canada. When you think about it, all the social issues on First Nations



SMUDGING IS A TRADITIONAL CEREMONY FOR PURIFYING OR CLEANSING THE SOUL TO DRIVE AWAY NEGATIVE ENERGY AND TO RESTORE BALANCE.

communities can be fixed by First Nations. Just imagine First Nations roads up to Northern communities, solving the water problem, building a better education, and maybe one of these kids could become Prime Minister. I believe the *FIRST* Robotics program can be the answer.

Q3: CAN YOU TELL US A SPECIAL MOMENT DURING YOUR TIME ON A ROBOTICS TEAM?

AZ: When we were at the World Championship in Detroit. The Chief of Wikwemikong, Duke Peltier, conducted a smudge with the robotics team and along with *FIRST* representatives in front of the COBO Centre. When the Chief was talking, he told us that we didn't have to hide anymore. Initially, we were going to do the smudge out of the way at the side of the building. This moment was special to me

because I always thought that we should hide our culture, so we don't disrupt the people around us. It was important to me that a respected leader told us that the people around us should see our culture so they can understand us, and so we can understand them better too.

MARY SAYS...

Q1: IN WHAT WAYS DO YOU CONTRIBUTE TO THE SUCCESS OF YOUR TEAM?

MP: Once I have a vision for a project that I have developed with my mentor and with feedback from the team, I always aim to pursue that vision with a passion. If I can delegate the work of that project to the strengths of those



Q2: WHAT PROGRAMMING LANGUAGE DO YOU USE TO PROGRAM YOUR TEAM'S ROBOT?

MP: Our team uses Java to code the robot. A lot of other teams use this language, and on multiple occasions, we've had to ask for help with our code, so it's nice that the language is so ubiquitous. Java is quite popular online so there is also a lot of support there. I would recommend using a programming language that has easily accessible support (either online or from mentors/other teams) for the greatest benefit.

MINDS *for* STEM

A Collaboration Inspiring
Kids in Coding and Creativity



Anu Bidani has over 20 years of corporate experience in the technology field, so she knows the value of STEM education first-hand. FIRST Robotics Canada was proud to partner with Anu's company STEM Minds through the CanCode program in order to give more kids and youth a chance to learn how to code. We talked to Anu about her cool coding company and the CanCode program.



Q1. WHY DID YOU DECIDE TO LAUNCH A CODING AND EDUCATION COMPANY?

ANU BIDANI (AB): My children were my motivation to launch STEM Minds. I wanted them to experience these kinds of programs so that they would be able to explore their passions and develop important skills, but the options available to us were so limited, especially in my community! So, I decided to do it myself! I launched STEM Minds in 2016 to ensure that children in my local community had access to high quality STEM programming without geographic barriers. We now deliver programs in person at our facility in Aurora, in our soon-to-open center in Markham, in public schools, and through our online platform. We continue to expand our reach and impact through strategic partnerships.

Q2: WHAT KIND OF COURSES DO YOU TEACH KIDS AND WHY DID YOU CHOOSE THOSE TOPICS?

AB: We believe that STEM is more than just one narrow focus or skill. We offer a holistic range of programs to engage a diverse community of youth with a variety of interests. Our courses range from coding and robotics, 2D and 3D design, app development, video game design, digital media, e-sports, entrepreneurship and more! Our expert team of certified teachers and STEM professionals design these programs with an intense focus on detail and pedagogy to ensure that we are building both technical and “soft” skills like communication, collaboration, and creativity so that youth are getting authentic experiences with STEM topics in a way that kids can truly understand. We are continuously evolving our programs so they are taught in a way that understands the child as whole from a socio-emotional and academic perspective.

Q3: WHAT IS A CERTIFIED B CORPORATION AND WHY IS IT IMPORTANT TO YOU?

AB: STEM Minds is proud to have achieved B Corp Certification. This credential is important to us to demonstrate that we have critical social and environmental commitments as a for-profit business and are working to address the sustainability goals of the world. This commitment

is important for us to create a powerful sustainable business framework so that our community, and especially the youth we work with, can see that a business can operate in a way that demonstrates that doing the right thing matters more than just profitability. Being a business supporting youth, we need to hold ourselves to a higher standard of operations, ethics and moral values.

Q4: WHAT KIND OF IMPACT HAVE YOU SEEN WITH THE CANCODE PROGRAM?

AB: CanCode is an amazing program offering youth the opportunity to explore coding without financial barriers. The program has extended funding to so many communities who otherwise may have been left behind without access to technology, programs and leaders who are passionate about supporting youth. We had the privilege of supporting the Canadian National Institute for the Blind (CNIB) this year with coding and robotics programs. With support from Steve, our passionate leader, we made many robotics tools easily accessible for visually impaired children with strategies and tooling developed to support their unique needs. Additionally, our work with 360Kids, an organization that supports youth at risk for homelessness, helped provide opportunities to give students a glimpse of hope for where they could channel their skills.



Meet KYLABOLDEN

Co-Founder & CEO of Wiz Kid Coding



Kyla Bolden is passionate about technology and business.

She is also the co-founder of Wiz Kid Coding (WKC), a growing coding and STEM education company. With over 3,000 kids and youth participating in its coding clubs and camps, WKC will soon impact even more students with growth in Ottawa, Calgary, and in the Caribbean. We talked to the Wiz Kid herself: Kyla Bolden to find out all about her coding smarts.

Q1: As a kid, what made you interested in coding?

KB: I started to learn how to build websites because I was really into fashion blogging and wanted to make my websites and tumblr look more appealing. I became interested in tech development and set my eyes on wanting to become an entrepreneur in the tech space.

Q2: Can you tell us about Wiz Kid Coding (WKC)?

KB: WKC provides coding, robotics and gaming classes to kids ages 3-16. Our classes are designed to teach kids how to code as a means to improve their critical thinking, problem-solving and computational skills. We also offer specialized coding and digital literacy classes for teenagers and young adults, particularly those with learning exceptionalities like Autism and ADD (Attention Deficit Disorder).

Q3: Why did you start WKC?

KB: The technology sector is one of the fastest growing industries in the world! Coders are the foundation of this sector—without them, ALL of the technology we use today wouldn't exist. Yet coding is not a mandated course that students have to take throughout North America. Wiz Kid Coding serves as a solution to filling this market gap, as well as filling a demand for youth coding education. In addition, in a world that is becoming increasingly digitized, we believe that it is important for students to have the tools to leverage technology to become innovators as opposed to merely consumers of technology.

Q4: What does a Co-Founder do?

KB: You have to wear a lot of different hats. Some days, I'm teaching a coding class and other days, I'm negotiating with corporate partners. In short, the most important tasks that I do is make sure the company is working towards a cohesive goal and that we never lose sight of our mission. It's also my goal to be willing to do what it takes to help keep the company on a successful path.

“I became fascinated with the idea that no matter who you are, where you live, or how old you are—if you learn how to code, you can create something amazing on the internet that the entire world can see.”

Q5: What are your top 3 tips for kids & youth hoping to turn their ideas into entrepreneurial ventures?

KB:

- 1 Know that you can do anything you put your mind to!
- 2 Read about other successful entrepreneurs. Not only will their stories be inspirational, but you will learn about the road to building your own business.
- 3 Know that you have time and keep having fun! When I was a kid, I was always working hard to develop new business ideas. I found the process of writing a business plan fun and exciting. But, it's important to not stress out and to make sure you are having fun in the process.

Q6: Where do you see future opportunities for the next generation of tech innovators?

KB: I see a lot of opportunities in blockchain [technology behind Bitcoin, the world's first digital cryptocurrency], artificial intelligence, autonomous vehicles, and green technologies. It's clear that there are many global challenges facing our world that need to be addressed: world hunger, global warming, the growing wealth gap, etc. Technology can really help to answer all of these problems. It's important for young people to understand the impact that they can have on the world when they learn to code.



Visit wizkidcoding.com to find out more about coding!

Engaging the Next Generation in STEM

The secret to getting kids interested in STEM? Robots and LEGO!



Sarah and Nixon operating their robot during a competition.



Nixon and her teammates Sarah, Samantha and Emilia.



PHOTOS: ELLINGTON NGUYEN

The more we can encourage and support kids with STEM opportunities, the greater we can give them a chance to find their interests and passions. 9-year-old Nixon is on a **FIRST LEGO** League team in Toronto, Ontario. What does she think of the experience? We had an opportunity to ask her!



Emilia, and Nixon presenting their project about global warming.



The St. Ambrose team's first time at the **FIRST LEGO** competition. Left to right; Jan, Carlo, Gabriel, Charlie, Jekai, Sarah, Nixon, Samantha and Emilia.

Q1. What do you like about building robots?

Nixon: I like building robots because it's fun and interesting to make different types of machines with LEGO. I like learning how to program the robots to do what we want them to do.

Q2. How did you get involved on a team?

N: First I tried out for the team and made the first cut. Then I learned how to program and work with my teammates. They helped me make the second cut that allowed me to enter the competition and represent St. Ambrose Catholic School.

Q3. Why is it important to learn how to build robots?

N: Maybe it could allow me to study how to be an engineer and use those skills in my life.

Q4. Who helped you learn how to build robots?

N: The people who helped me build robots were my parents, coaches and my teammates. Between learning how to build structures with LEGO and then learning the mechanics of creating a robot.

“When Nixon joined the **FIRST LEGO** League team, I couldn't believe how excited she became. She had never coded a robot before so this was a brand new experience for her. I saw a new level of confidence build inside of her as she became more familiar with programming the robot. I am so proud of her willingness to learn and I'm also excited for the new opportunities she's experienced since joining a robotics team!”
 –Jill Monsod, Nixon's mom



HELLO WORLD

When learning a new language, "hello" is one of the first words we learn. Why? Because it's easy and useful. Learning a programming language is similar. We can learn the syntax (spelling and grammar) of a programming language simply by checking out the cool ways to say Hello World in different programming languages. Check it out!

JAVA

Known as the language of Minecraft and named after the coffee from a small Indonesian island, this major programming language is a common and useful programming language to know.

```
public class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello, World");
    }
}
```

JAVASCRIPT

You can have a lot of fun making web pages do cool things in JavaScript.

```
alert('Hello, world!');
```

PHP

Popular for web development, PHP is simple for beginners but has advanced features for professional programmers.

```
<?php echo "Hello, World!"; ?>
```

PASCAL

Pascal was developed to encourage good programming practices. Beginnings and endings are all part of good grammar practices.

```
program HelloWorld;
begin
    WriteLn('Hello, world!');
end.
```

PYTHON: Used to develop software and apps, and many of today's tech companies like Netflix and Instagram use Python for the back-end of their websites.

```
print("Hello, world!")
```



YOUR TURN!

Curious about coding but don't know how to start? Many of today's programmers learned to program by working with small programs and making changes to see what happened. If you're curious to try the same thing, JavaScript can be run on your web browser! Find out if your browser is Chrome or Firefox, and then follow these simple steps to start experimenting with JavaScript.



IN CHROME:

- Step 1:** Go to the menu icon in the top right.
- Step 2:** Select More Tools from the dropdown menu.
- Step 3:** Select Developer Tools.
- Step 4:** In the top menu bar, select Console (it's to the right of Elements).
- Step 5:** Type the Hello World! program for JavaScript
- Step 6:** Hit enter after typing and you should see Hello world! pop-up on your screen!
- Step 7:** Change the JavaScript program slightly to see what happens by capitalizing the word World. What happened?
- Step 8:** Can you figure out how to program the words hello + your name?



IN FIREFOX:

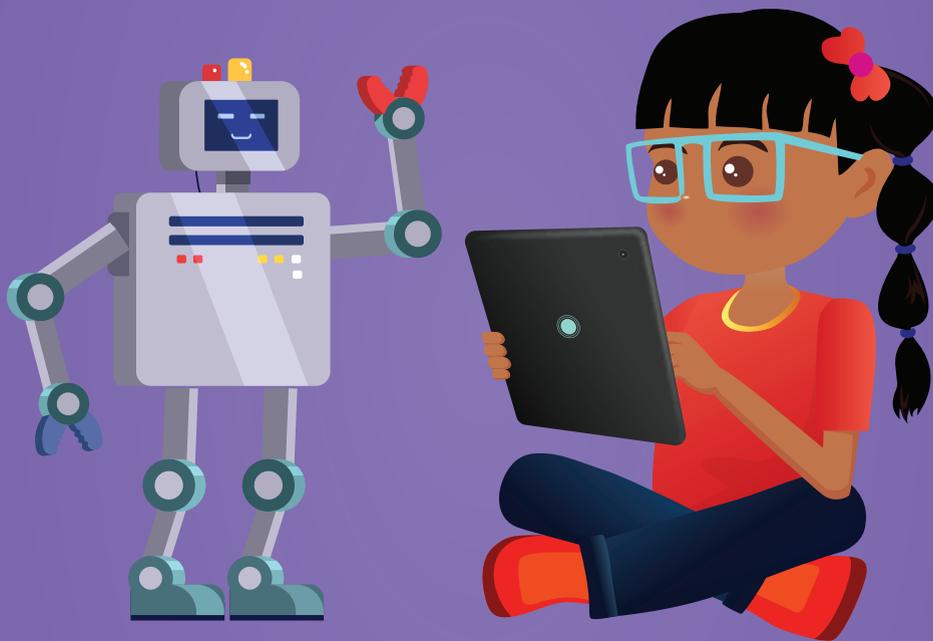
- Step 1:** Click the menu icon on the top right-hand side.
- Step 2:** Select Web Developer from the dropdown menu.
- Step 3:** Select Web Console from the next menu.
- Step 4:** Type the Hello World! program for JavaScript.
- Step 5:** Hit enter after typing. You should see Hello, world! pop-up on your screen.
- Step 6:** Change the JavaScript program slightly to see what happens by capitalizing the word World. What happened?
- Step 7:** Can you figure out how to program the words hello + your name?



Innovation, Science and
Economic Development Canada

Innovation, Sciences et
Développement économique Canada

<CanCODE> <CODECan>



canada.ca/CanCODE
#CanCODE

FOR INSPIRATION & RECOGNITION OF SCIENCE & TECHNOLOGY



<CanCODE>

<CODECan>