Is there something cool about science, math, engineering, or technology that you want to share with your class and family? Write about it here.
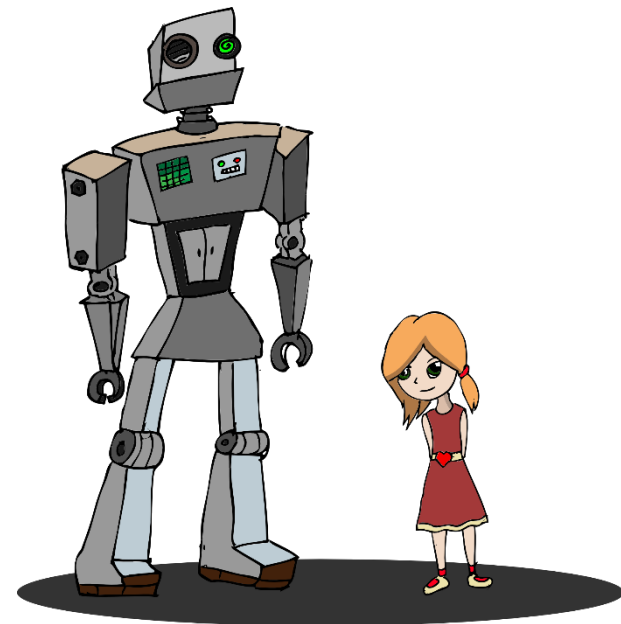
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Read about STEM topics other kids find cool at the Kids' Corner on our website.

CreositySpace
Connecting Kids to STEM Through Entrepreneurship

My STEM Stories™

Coding Whisperers

How do you talk to a robot?

Name:

Vocabulary

Term	Definition	A Picture or Simplified Definition
Computer Programming (coding)	Computer programming is a way for a person to translate their logic into a computer language.	
Computer Hardware	Computer hardware are the parts of a computer you can touch—such as the screen, computer chips, and keyboard.	
Computer Software	Computer software, or computer code, is the set of instructions that tell the computer what to do.	
Physical Computing	Physical computing is the ability to control computer hardware and physical devices (motors, sensors, lights) with computer software.	
Algorithm	An algorithm is a guide, or an outline, that is used to lay out all the steps needed for a computer program or code.	
Input/Output (I/O)	Inputs and Outputs allow for the user to control software. Touchscreens, keyboards, mice, and joysticks are all examples of I/O devices.	

How are innovators and entrepreneurs using coding to help people? Describe a problem you see in your home, school, or neighborhood, and discuss how coding might be used to help with a solution.

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Innovator Spotlight

Alexander Deans and the iAid Device

Alexander Deans, a 16-year-old from Ontario, Canada, developed the iAid device to help people who are blind or have trouble seeing get around more easily. He designed a joystick device that can be hooked up to your phone and helps the user move around without hitting things. Listen to Alex describe his innovation in this video

www.youtube.com/watch?v=EGPo7gnvlhE&t=1s.

Coding

Coding, also known as computer programming, is the language of electronics. It can be as straightforward as asking a device to calculate two plus two or as complicated as creating a video game world where the number of outcomes between two players is almost impossible to quantify.
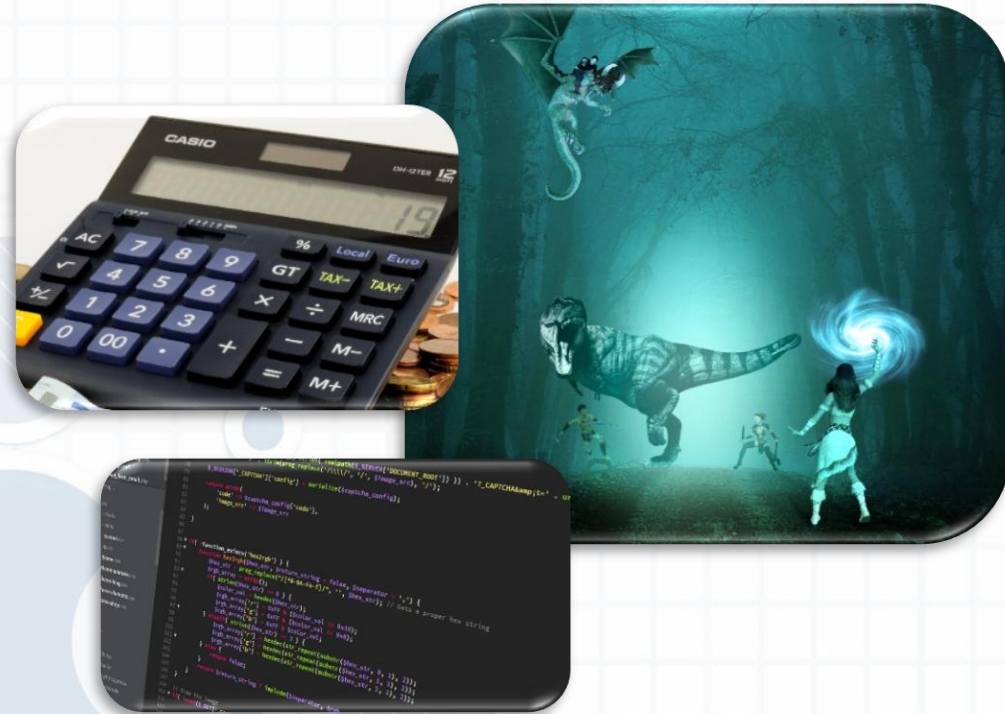
Coding is such a big part of our everyday life that soon babies might learn a computer language at the same time they are learning how to speak!

There are many examples of coding all around us. One example is physical computing, which is when computers and electronics interact with the outside world through a series of rules or *preprogrammed commands*. One example you might be familiar with is a video game controller.

With physical computing, the electronics respond to specific instructions that are written in the code. These instructions may come from the words in the code itself or how the code tells the electronics to respond to an external action (like moving a joystick or removing a light source).

Entrepreneur Flashcard
Brian Saab, Amy Hutchinson & Nate Miller
at UNEARTH Technologies

Meet Nate, Amy, and Brian. The started a company called Unearth Technologies. They each had different skills and interests. Brian liked business and management experience. Amy had software and product development experience. Nate was focused on visual design and understanding customers.

Computers, cell phones, satellites and drones can collect a lot of information—so much information that it can be hard to find what you need (like finding matching socks in a huge pile of laundry!).

That's where Unearth Technologies made a difference. They were experts in both COLLECTING and ORGANIZING information. Unearth Technologies designed special software to help the construction industry to help them keep track how far along projects were and where everyone and everything was.

In 2023 Unearth Technologies was acquired by Procore and Nate, Amy and Brian moved on to their next adventure. Congratulations to all of them!

Innovator Showcase
Roy Allela and Sign-IO

Roy Allela is from Kenya. He studied engineering and computer science in college. His 6-year-old niece is deaf, and he wanted to help her communicate. She knows sign language, but many people cannot understand sign language.

Roy developed a glove that his niece could wear that had **sensors** in each finger. These sensors can tell how much the finger was bent and how it was moving. When the gloves are paired with a cell phone or tablet, much the same way we pair wireless headphones, and the phone or tablet turns the motion into words. Then, the phone or table can "speak" using a text-to-speech program.

Although Sign-IO gloves are not perfect, they are a great tool for people, especially younger people, who need help with everyday communication.

Another field of coding is that of data analysis—which is paving the way for the development of new technologies such as artificial intelligence. In these applications computers analyze a variety of inputs and then make their own decisions. These decisions can be a simple as determining the pattern in a series of numbers or as complicated as a self-driving car or a chess-playing robot.

Every day entrepreneurs, engineers, and regular people (like you and me) come up with new ways to use coding to solve problems in their lives. Is there a challenge in your life that you think coding could help you solve?

How is coding like a spoken language?

help with remembering things, one of the most important needs for Alzheimer's patients is that they stay connected with their family and community. In 2019, she launched the Timeless app on the App Store. Timeless focused on keeping people connected while addressing some of the most common challenges. Some other features of the app included daily reminders, photo grouping, and recognition (using artificial intelligence), as well as alerts for things that might be forgotten such as repeated phone calls.

Recently, as Emma started college, she realized she needed to step back from working on and promoting Timeless to focus on school. As a result, there was no one to continue updating the Timeless code and she decided to remove it from the App Store. Despite this transition for her business, Emma remains passionate about using technology to support our aging community and the Timeless website remains an active record of her contribution to this field.

Meet Some Innovators

Timeless (www.timeless.care)

Emma Yang started coding when she was only six and began developing the Timeless app when she was only 8-years old.

At first, she focused her coding efforts on making simple video games but one day she noticed things didn't seem quite right with her grandmother, who lived in Hong Kong. It started when her grandmother forgot her birthday. Then she started calling the house over and over again not realizing they had spoken on the phone a few minutes earlier. It was around this time that Emma's family discovered her grandmother had Alzheimer's disease—a disease that effects your brain and makes it hard to remember names, faces, recent activities, or upcoming plans. Emma wanted to help her grandmother, so she started to do some research.

She figured out what the hardest tasks were for people with Alzheimer's and learned what they needed most. In addition to

Describe three ways you interact with coding or computer programming every day?

Create Your Own Timeline

20?? CE

What will you invent?