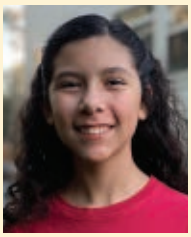
SIGNAL
kids
AFCEA's STEM PUBLICATION

CYBERSECURITY

In this issue

Kid Reporters in this issue are:



SOFIA CROSS

Sofia Cross is a fifth-grader at Fairfax Villa Elementary School in Fairfax, Virginia. Her favorite subject is science, and when she's not in school, she likes reading, being with friends, and playing with her dog, Winston.

GIGI MOON

Gwyneth "Gigi" Moon is a sixth grader at Greenbriar West Elementary School in Fairfax, Virginia. She is a performer with the Russell School of Ballet, where she has danced for six years. Moon is also an actor, last starring as Gertrude McFuzz in the City of Fairfax Theatre Company's production of Seussical the Musical, Jr. She spends a good deal of her free time drawing animals using Procreate graphics software and designing homes with her friends online in Roblox. She plans to pursue both acting and cybersecurity as career paths.

Cover illustration by Chris D'Elia and Foxelle Art/Paradise Images/Shutterstock.

***SIGNAL* KIDS** is published by AFCEA International at 4114 Legato Road, Suite 1000, Fairfax, Virginia 22033-4002, (703) 631-6100. Toll-free (800) 336-4583. Authors are entirely responsible for opinions expressed in articles appearing in AFCEA publications, and these opinions are not to be construed as official or reflecting the views of AFCEA International.

EDITOR: Bodil Lund
STAFF: Kaitlyn Cotter, Chris D'Elia, Jenn Deuterman, Cyndy Hogan, Megan Lee, Rachel Lilly, Julianne Simpson

Dreams Can Come True

Welcome to our second issue!

My name is Rachel Lilly, and I'm part of the team that brings you *SIGNAL* Kids. In fact, I actually helped come up with the idea for this magazine! It all started when my kids, Clara and Braden, got some magazines in the mail from their grandparents. They were so excited to have mail of their very own, written just for them! It got me thinking—how can we help kids get excited about things like science, technology, engineering and math? I pitched the idea for a kids' magazine at one of our meetings, and it came to life with the help of my awesome co-workers. Everything starts with just an idea. Don't ever tell yourself an idea is too big or too small to share. Keeping dreaming of new things, and you never know what might happen. It could become a reality—just like *SIGNAL* Kids!

Hey, kids!

Don't forget to look for Obo! He's hiding all around this issue—see if you can spot him.

Who Am I ?

- I have been called "America's first female cryptanalyst."
- In college, I majored in English literature but also studied Latin, Greek and German.
- I met my husband, William, at work.
- I decoded more than 12,000 messages to help the U.S. Coast Guard find illegal liquor during Prohibition.
- During the 1930s, I trained U.S. Coast Guard officers in cryptology.
- I spent World War II as a Nazi spy hunter for the FBI.

GO TO PAGE 7 TO FIND OUT WHO I AM.

VOCABULARY

Cryptanalyst— code breaker.

Prohibition— a period of time from 1920 to 1933 when people were prohibited, or banned, from buying, selling and consuming alcohol.

CODE.ORG MAKES CODING FUN

Code.org is an online website that allows kids to learn about coding and how games are made.

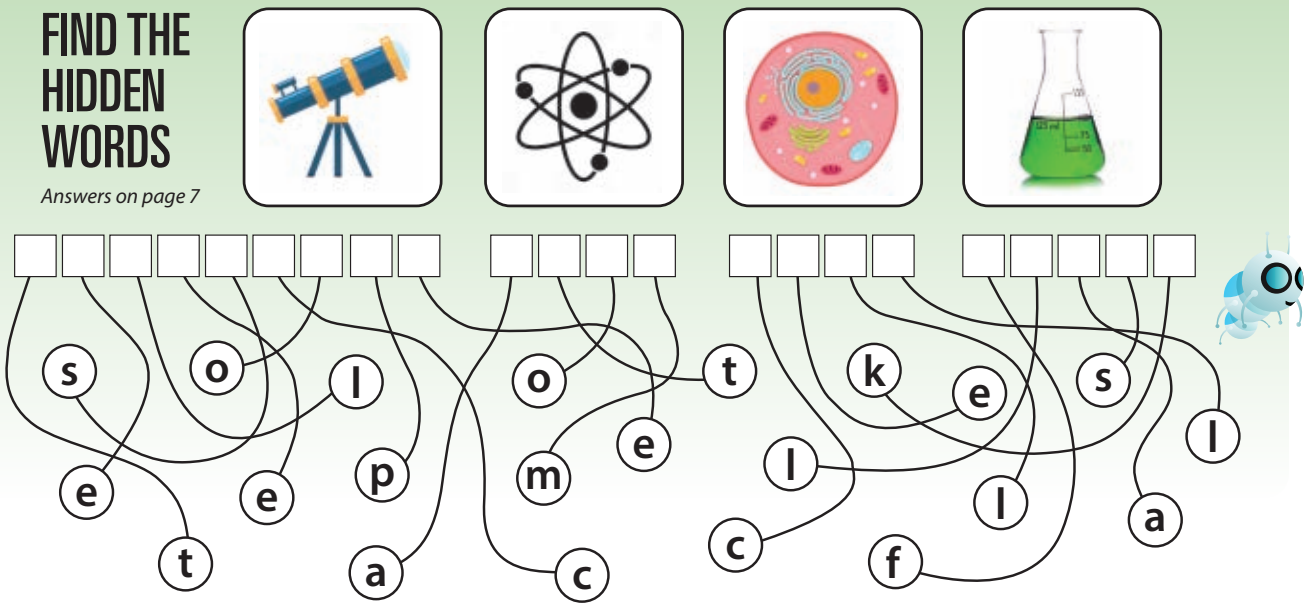
Code.org allows you to practice coding and helps you create games of your own.

The website shows you examples of how to use code to create and control games. From these examples, you can make coloring games, maze games, pattern games and many more. Your friends and family can play games with you too.

Submitted by Olivia Caparratto, 14, a reader of *SIGNAL* Kids, Maryland.

FIND THE HIDDEN WORDS

Answers on page 7



BOOK CORNER

Check out your local library or bookstore for these books recommended by STEM teachers who work with kids just like you!

Jenna Lebling, 4th grade teacher, Henrico County, VA
- *Perfect Square* by Michael Hall
- *If I Built a House* by Chris Van Dusen
- *Rosie Revere Engineer* by Andrea Beaty and David Roberts

Stephanie Case, 3rd grade teacher, Vienna, VA
- *The Most Magnificent Thing* by Ashley Spires
- *What Do You Do With an Idea?* by Kobi Yamada

Hey, STEM teachers! Thank you so much for the incredible work you do in the classroom. Do you have a favorite book for your students? Email rlilly@afcea.org for a chance to be featured in a future issue.

WHERE IN THE WORLD

STEM EDUCATION IN THE CZECH REPUBLIC

Science in the Czech Republic got started in the ninth century! But by the 19th and 20th centuries, many famous scientists were born or lived in the Czech Republic. Albert Einstein, Christian Doppler and Gregor Mendel were just some of them.

Today, almost 20,000 young people aged 9 to 25 compete in the Czech Cyber Security Competition. The first goal of the competition is to let more people know about STEM fields. The second is to find young people like you who have talent in STEM. Finding new talent could mean finding new solutions to real-world problems.

PUTTING ROBOTS TO WORK

You probably know what a robot is. In movies, human-like robots can do almost anything. In real life, robots are less human but much more useful. They can move heavy loads, weld or even help doctors cure people. But do you know where the word robot comes from? The word was invented by Czech writer Karel Čapek back in the 1920s when he used it in his play, *RUR*. The play was about intelligent machines. The name comes from an old Czech word *robota*, which means heavy work. So, the word robot means "a worker."

You are now an operator of a robot that paints. You paint with the tiny blue machine in the left bottom corner of the picture. Your goal is to paint a few tiles of the picture to reveal the secret code that will take you to the next challenge. Follow the instructions in the robot's program and "paint" the right tiles (use your pencil, marker or highlighter):

Your robot starts in the bottom left corner:

1. **Go four tiles up.**
2. **Go three tiles right.**
3. **Repeat the following task three times:**
   - **Paint the tile you are on.**
   - **Move one step right.**
4. **When done, move 17 tiles to the right (count carefully).**
5. **Go three tiles up and paint the tile you land on.**

Well done! Now turn off your robot and scan the picture with a QR reader app in a smartphone.

FUN FACT
THAT LINK & OBO LEARNED

In many countries in Europe, schools teach science, technology, engineering and math as different classes.

To Find out more fun facts, Go to https://signal.afcea.org/STEMworld

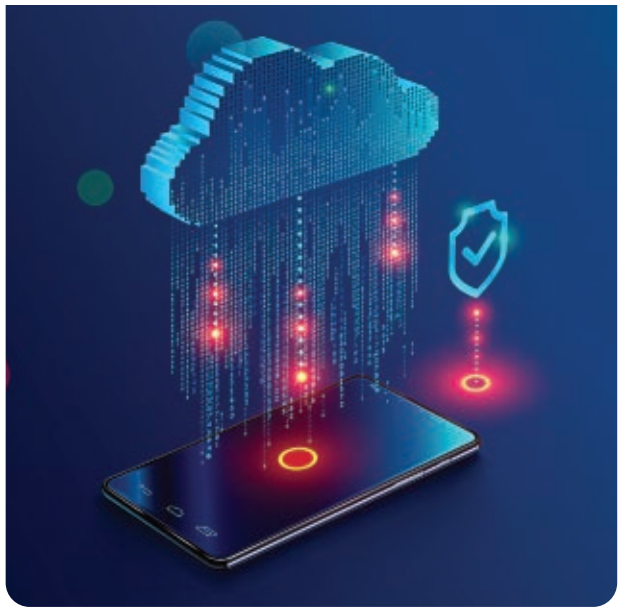
UNITED KINGDOM

Have you ever wondered what kids in England are learning? Like you, most kids have been doing school at home in 2020. Not all kids have a computer at home, but if they do, they can have fun with online STEM activities and cyber games here: https://cybergamesuk.com. Kids in the UK are learning about why STEM is important to the future. They're also finding out about careers in STEM, cyber crime, cybersecurity, space, engineering and new technology.

If you'd like to find out about some of the cool STEM activities kids across the Atlantic Ocean are doing, check out the links on this website: https://signal.afcea.org/stemuk.

You'll see you have a lot in common with kids in the UK!

Andrey Suslov/Shutterstock



Learning Something New: The Cloud and DevSecOps

BY SOFIA CROSS

Justin Fanelli is a chief architect and a technical director at the Naval Information Warfare Center. In other words, Mr. Fanelli is an engineer. His areas of engineering are health care and people information. Mr. Fanelli's groups are trying to be the "Google of information" on people to help them be more successful in their health and careers.

JUSTIN FANELLI

Cloud computing is the Internet. The cloud storage is unlimited. The cloud stores things like photos, apps and videos. It's still hardware and software, but it goes on virtually forever. Everything digital goes into the cloud. Software in the cloud can be accessed by everybody.

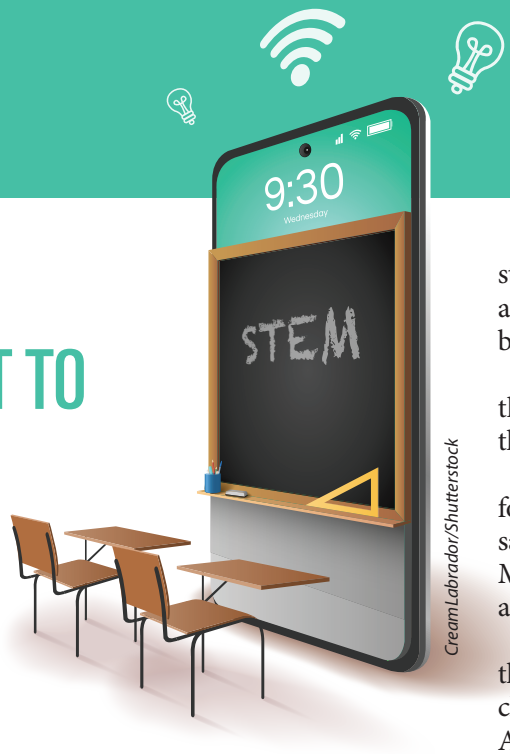
Here are some things I learned about DevSecOps (Development Security Operations):

- Development means building apps.
- Operations means using apps and security.
- DevSecOps helps you get features faster. It can also fix things faster.
- Software and code are the same thing.
- All devices are called hardware. Hardware needs software to do anything, but you can do different things with software.
- Almost anything can be coded. DevSecOps allows coding more quickly and more securely.

Mr. Fanelli helped me understand that coding is like a puzzle. It can be fun, and it can solve problems.

STUDENTS AND TEACHERS ADJUST TO VIRTUAL LEARNING

BY GIGI MOON



CreamLabrador/Shutterstock

My name is Gigi Moon, and today I will be interviewing Alyssa Jasso, Payton Avery and Atticus Moon to learn about some virtual learning perspectives.

I asked the two teachers, Ms. Jasso and Ms. Avery, "What's the biggest challenge with virtual learning/teaching?" They both responded with the same main idea. They essentially said, "Making things interactive and enjoyable, so the students pay attention." Atticus Moon, the student, answered, "Paying attention during class—there being so many distractions." I think the conclusion is that it's hard to pay attention. Even for teachers!

I also asked all of them what they think the best thing about virtual learning is. Atticus answered, "Being in the comfort of my home. Also, I don't have to wake up early and walk to school." Ms. Jasso also answered that. Ms. Avery said she liked how she can teach her students about computers, coding, technology and stuff like that. To summarize, this is a new perspective for learning and being at home.

Both of the teachers miss seeing their students' faces, and they miss the humor of classes, too.

"What is a favorite gadget you use for virtual learning?" I asked. Atticus said a comfy chair and headphones. Ms. Avery answered, "Snacks, music and coffee!"

When asked about the funniest thing anyone has said during online classes, they took a while to recall. All three said more things happen when you're in person.

Atticus: "Paintings are just trading cards for rich people."

Ms. Jasso: "The technology isn't working, and my student said, 'I bet you wish you had a different job.'"

Ms. Avery: "A first-grader told me his head hurt...not remembering that going to the nurse means going to see Mom!"

The purpose of this interview is to show how students and teachers feel about virtual learning! What do YOU think of virtual learning/teaching?

Navajo Talkers

In 1942, the U.S. Marines recruited 29 men from the Navajo Indian tribe to be Navajo Code Talkers. Each of the men had to be able to do all of the things a Marine* in the U.S. military could do. They also had to be able to speak in the Navajo language and English. These men came up with a code that would be used during World War II. The code, sent by telephone and radio in the Navajo's native language, was never broken by the enemy Japanese.

The Navajo Code Talkers invented an alphabet system using Navajo words. The Navajo words, when translated into English, would spell out one of the 26 letters in the alphabet.

**Marine: a soldier in the U.S. military.*

Here are some of the words they used:

Letter	Navajo word	English word
C	MOASI	Cat
D	LHA-CHA-EH	Dog
E	DZEH	Elk
I	TKIN	Ice
O	NE-AHS-JAH	Owl
R	GAH	Rabbit
V	A-KEH-DI-GLINI	Victor

Can you translate the following coded message?

MOASI NE-AHS-JAH LHA-CHA-EH DZEH GAH DZEH MOASI DZEH TKIN A-KEH-DI-GLINI DZEH LHA-CHA-EH

Find the answer below.

Answer to "Who Am I?" from page 3

Elizebeth Smith Friedman was "America's first female cryptanalyst" and an author.

Hidden Words from page 3

TELESCOPE, ATOM, CELL, FLASK

Navajo Coded Message: CODE RECEIVED

U.S. SPACE FORCE CELEBRATES ITS ONE-YEAR ANNIVERSARY

An Atlas V CST-100 Starliner rocket successfully launches at Cape Canaveral Air Force Station, Florida in December 2019.

U.S. Air Force photo by Senior Airman Dalton Williams

Have you ever dreamed of being an astronaut, flying through space in zero gravity?

The U.S. Space Force (USSF) is the newest branch of the military. December 20 of this year will mark its first anniversary.

The Space Force's job is to build rockets and satellites to help protect us. The Space Force trains people to keep us safe and secure with things like weather tracking, GPS data and new ways to defend against enemies that might try to sneak up on us (since we can't always see them from Earth).

As technologies have changed, the way wars are fought has also changed. Throughout history, battles such as the Revolutionary War or World War II were waged with soldiers on foot or fighter jets and battleships, but now in the 21st century, outer space is a whole new battlefield!

Can you name the other five branches of the U.S. military? Do you know where most of them are headquartered?

U.S. branches of the military include the Army, Navy, Marine Corps, Air Force, Coast Guard and now the Space Force. Most of the branches' main offices are located at the Pentagon near Washington, D.C.

Photo courtesy of Lockheed Martin

The SBIRS GEO-5 satellite enters a vacuum chamber at Lockheed Martin's Sunnyvale, California, production facility to begin testing.

CAN YOU **CRACK** THE **CODE**?

R H L U N U F S I O I L O S G N I B S N V P A T C H K M Y V
E R A W M O S N A R L B U U O J Y T N E R X S L O N A F G O
B J T C N D I P T A Y R B R V E O P Y Z C P U S N L S Q V J
Y R K Y K A X T W N I R X I Z V P A X G N U H Y W A U U O Z
C R Z T K M J E P V T H N V P H I S H I N G R A H C A E R B
O S Y B O W R O J Y L Q N I G N A S N G Y S R I O H O R G U
N S T Q G I F N R S R Z H T U T T W O F Z E V F T W L E E N
J G R X F R G C O T B C H N W V X O B I W Y Q K I Y R L C W
J V V E D M K H K D E V N A M Z Q R W M R L V N D W S Y E B
K D T Z S I H J X T B A G E C G G D I Y Y T Q Y I M T T O C
C A C I A N A T I 0 N A L S E C U R I T Y C O M P A N Y I T

Word Search: Find all of the cybersecurity related terms below.

RANSOMWARE PASSWORD MALWARE SECURITY BREACH CYBER VIRUS
ENCRYPTION ANTIVIRUS FIREWALL PHISHING TROJAN PATCH HACK

EXPERTISE AND **TECHNOLOGY**
FOR NATIONAL SECURITY

www.caci.com

CACI
EVER VIGILANT