

# ROOT & STEM

## Digital Citizenship

### DANGER DEEP DIVE

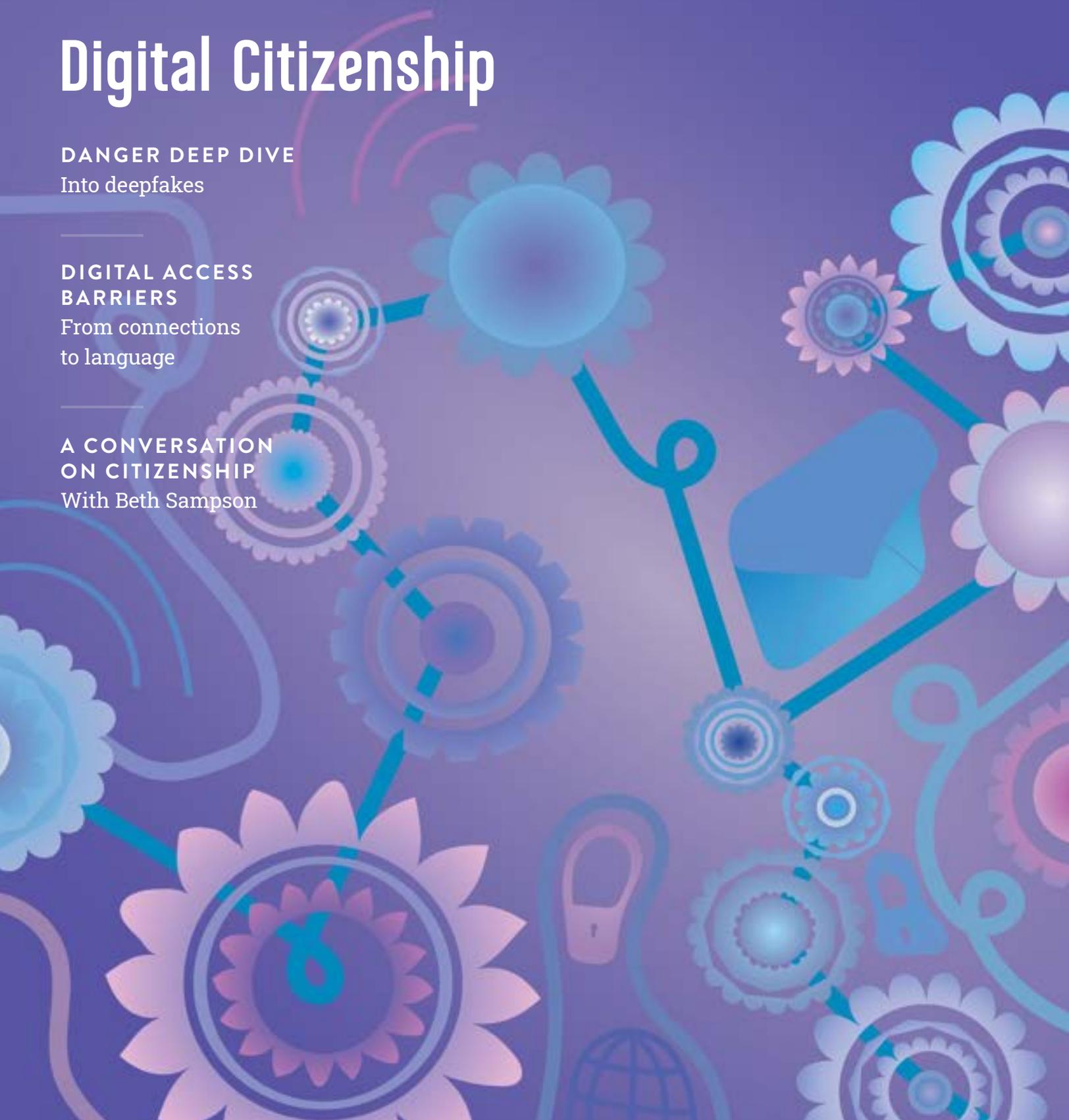
Into deepfakes

### DIGITAL ACCESS BARRIERS

From connections to language

### A CONVERSATION ON CITIZENSHIP

With Beth Sampson



ADVOCACY

EDUCATION

MENTORSHIP

RESOURCES

PRODUCTION

EMPLOYMENT

# AMPERE LIFECYCLE

Ampere follows a life cycle model to support the core phases of a person's learning journey in STEAM education. We strive to provide educators and students with opportunities and resources each step of the way.

To learn more about what we do, visit our website at

[amp.ca](http://amp.ca)



# ROOT & STEM

## ABOUT AMPERE

Ampere, a not-for-profit organization, incorporates STEAM into unique learning applications that promote storytelling, health, wellness, and growth in rural and remote communities. At its core, Ampere embraces diversity and creates opportunities in order to empower all people.

## DIGITAL TAXONOMY

Computer Science Education is more than just coding. A comprehensive approach to it includes learning skills and competencies from each of the following areas. Look for the icons at the bottom of each article or lesson plan for suggested curriculum connections.

Reference: *Learning for the Digital World: A Pan-Canadian K-12 Computer Science Education Framework*. 2020.  
<https://k12csframework.ca/>



### CODING AND PROGRAMING

- Algorithms
- Data Structure
- Modelling and Abstraction
- Modularity
- Debugging



### COMPUTING AND NETWORKS

- Hardware and Software
- File Management
- Troubleshooting
- Digital Connectivity
- Cybersecurity



### DATA

- Data and Its Uses
- Organizing Data
- Assessing Information
- Ownership and Governance
- AI and Machine Learning



### TECHNOLOGY AND SOCIETY

- Safe Communication
- Ethics, Safety, and the Law
- Tech and the Environment
- History and Technology
- Tech and Well-being



### DESIGN

- User Design
- Visual Design
- Universal Design

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12 Peel Street, Lindsay, Ontario, K9V 3L8  
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### Publisher

Ryan Oliver

### Editorial Lead

Chelsea Kowalski

### Copy Editor

Nicholas Davies

### Design & Layout

Maracle

### Art Direction

Stephanie Amell, Emily Canfield, Mariana Fernandez, Alyssa Rowe

### Cover Illustration

Mekayla Dionne

### Logo Design

X-ing Design

### Contributors

Actua, Ayesha Akhlaq, Sharon Aschaiek, Nia Emmanuel Briggs, Alina Eyamie, Kevin Frank, Chelsea Kowalski, Vivian Lee, ODLAN, Jordynn Rehel-Sutherland, Beth Sampson, John Stewart, Cassidy Swanston

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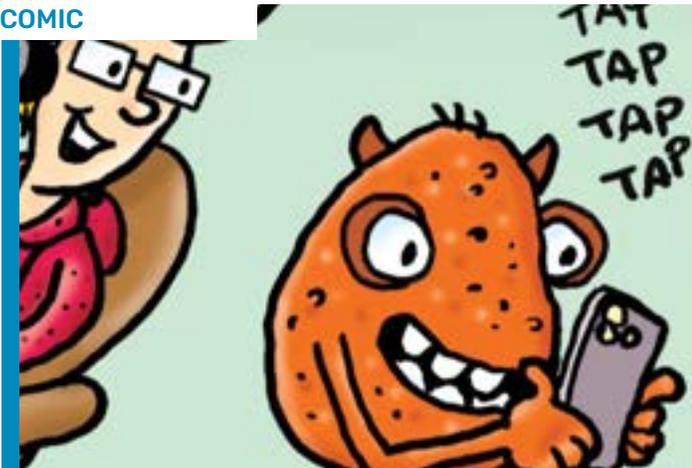
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### Mekayla Dionne

*Cover Illustration*

Mekayla Dionne is a professional artist, mainly creating large-scale abstract paintings, fibre art, and digital art. Inspired by her love for nature and her experience living in cities, in her work she uses bright colours and bold shapes to convey emotion. She is currently pursuing her Master of Philanthropy and Nonprofit Leadership degree at Carleton University, with the hope of continuing her ongoing work in the arts and non-profit sector in a fundraising or strategic planning role.



### Vivian Lee

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Vivian Lee is an education management and technology specialist, with over 10 years of experience in organization leadership, educational technology (EdTech) curriculum design, and course architecture in the private, public, and non-profit sectors. By day, Lee is Director of Education and Strategy at the Ontario Digital Literacy and Access Network (ODLAN), where she supports the development and delivery of online resources for the 2SLGBTQIA+ community. Her favourite topics in education are digital citizenship, artificial intelligence systems, and next-generation cybersecurity strategies. By night, she is an academic researcher working through her doctorate in curriculum policy for provincial and governmental institutions. Her thesis work and publications centre on EdTech futures, STEM for multilingual learners, digital citizenship curriculum policy, digital access issues, and intersectional education frameworks.



### Cassidy Swanston

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Cassidy Swanston is a science communication specialist with extensive experience in STEM outreach, education, and design. She holds a master's degree in Communication and a B.Sc (Honours) in biology from the University of Ottawa. In her role as an instructional designer at Actua, Swanston focuses on creating STEM educational materials for youth and educators in remote and rural communities.



### Sharon Aschaiek

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Sharon Aschaiek, the principal of Higher Ed Communications, writes about the education space, producing articles about research breakthroughs, successful alumni, and innovative practices.



### Kevin Frank

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Kevin Frank is an award-winning author and illustrator, and the creator of the popular *Scurvy Dogs* graphic novel series for children. He lives in rural Ontario and steals his best material from his wife and three children.

# Flying with a Digital Passport

The concept of digital citizenship has always been difficult to describe in simple terms. One of the original ideas behind digital citizenship arose among a group of school administrators who were nervous about a scary new thing called the World Wide Web. They did what any adult does when they want to protect kids from something unfamiliar, and their risk assessment instincts kicked in. An approach was developed around a sense of personal responsibility, in which any given web user takes control of their experiences, actions, and all the inevitable consequences of using the internet. Schools that had access to the internet in the early 2000s came up with a long list of dos and don'ts and proposed concepts with old-timey-sounding names like “netiquette.” Educators are well acquainted with the policy documents, like the [“Department of Education School Social Media Policy”](#) that outline the rights and responsibilities of digital citizens. Nowadays, most school staff and students have signed some kind of agreement about the use of personal devices and what they can and can't do online. That's a great place to start. But digital citizenship is bigger than that.

Digital citizenship can be seen as an extension of a person's civic engagement. Many saw the internet as an opportunity for worldwide political and community engagement, whereas community had previously been a local concept. With the internet, you could find a new community online. You could get information about your political representative and you could share your perspective widely with the world. This version of digital citizenship is about strengthening collective identity and amplifying voices of underserved communities on a global scale for the first time in history. A new kind of activism was born out of the rise of the internet. For Indigenous communities, digital citizenship created an opportunity to strengthen remote community relationships and raise awareness about issues of sovereignty, land stewardship, and cultural identity. An example from 2014 was the hashtag #sealfie, which became popular among Inuit communities as a way to raise awareness about cultural seal-hunting practices and their importance to everyday life in the Arctic.



COURTESY OF AMPERE

Another form of digital citizenship is described as a collection of internet-related literacies. A user might be faced with the following questions when speaking of this kind of digital citizenship: Can you use a password manager? Think critically about media content? Code a website? Open a social media account? Show kindness to others online? Tell when ChatGPT is producing inaccurate information? These skills are all part of being a digital citizen. But where do the questions stop? It's an endless list of skills that is constantly shifting over time.

So, what does it all mean? Digital citizenship is simply one's ability to be a human being on the internet. It's an ever-changing, evolving concept that needs to be woven into every school subject and accepted as a part of contemporary reality. Forcing students to turn off their phones and “practise digital abstinence” has never been the key to effective digital citizenship. We need to learn the skills to use the tools that are available. We need to remind ourselves that the internet itself is a tool and that, like any tool, it can be used for good or bad. So, choose to use the internet to connect with others, to share important information, to learn about yourself, your culture, and those all over the world. Be proud of your digital citizenship.

— VIVIAN LEE



# Danger Deep Dive

BY CASSIDY SWANSTON

In early 2024, families of students attending Collège Béliveau in Winnipeg received a deeply troubling memo: sexually explicit images of female students were being spread rapidly throughout the student body—and they weren't real. These doctored images, called deepfakes, were generated using artificial intelligence (AI).

The school explained that the creator of the deepfakes likely obtained the base images from social media, then manipulated them using AI. The school board did not disclose the number of people affected but confirmed that at least 17 images had been shared. Some students claimed the actual number of altered images was significantly higher: potentially as many as 300.

A number of AI-driven apps leverage machine learning to analyze and manipulate photos, making it extremely simple to produce artificial images. Just a few years ago, creating deepfakes like those shared at Collège Béliveau would have been difficult, especially for students, as it required specialized knowledge and software. Today, that has changed, thanks to easy-to-use, freely available software. By offering tools that can digitally alter photos to “remove” a subject's clothing, the software can generate sexually explicit images without that subject's consent or awareness. Such technology is becoming more accessible, and its effects are increasingly realistic. While there are some ways to discern AI images from real ones, it can be very difficult to make accurate discernments.

While these sorts of AI-generated images are fake, the harm they can cause is all too real. Victims often experience significant emotional distress, which can lead to serious mental health challenges. They are also vulnerable to further exploitation. In this form of abuse, known as “sextortion,” perpetrators threaten to share deepfakes to extort money or demand real explicit material. Many young people don't report this abuse, fearing even greater harm.

The consequences for young creators of deepfakes can also be severe. Lloyd Richardson, Director of IT at the Canadian Centre for Child Protection, explained to the *Free Press* that many young offend-

ers fail to grasp the severity of their actions. “The images they're producing are, technically, child sexual abuse material,” he stated.

Sharing sexually explicit images of individuals without their consent is a criminal offence in Canada. While the legal framework surrounding deepfakes is still evolving, the law is clearer when minors are involved. Under Canada's Criminal Code, it is illegal to create or possess sexually explicit drawings or digital images depicting individuals under the age of 18, whether or not the images are “real.”

Last year, Cybertip, Canada's national tip line for reporting online child sexual exploitation, processed nearly 4,000 sexually explicit deepfake images of youth. While it's uncertain how this issue will evolve, there are proactive steps that can be taken to help protect users from exploitation. Trusted adults should encourage open conversations with young people about online boundaries and the serious consequences of violating them.

If you are a victim of abuse involving sexually explicit deepfakes, remember you're not alone. People want to help. For young victims, telling a trusted adult about the abuse is a good first step. There are platforms like [cybertip.ca](https://www.cybertip.ca) and [needhelpnow.ca](https://www.needhelpnow.ca) that can assist with removing images from the internet. You have the right to privacy and control over your body—both online and off.

**Cybertip (1-866-658-9022)** can provide further resources, and youth can speak confidentially to professional counsellors at **Kids Help Phone (1-800-668-6868)**.

Actua is a leading science, technology, engineering, and mathematics (STEM) youth outreach network in Canada representing over 40 university and college-based members. Every year, Actua and its network engage more than 500,000 young people across Canada in over 600 communities nationwide in hands-on educational workshops, camps, and community outreach initiatives. Actua focuses on engaging equity-deserving youth through specialized programs for Indigenous youth, Black youth, girls and young women, at-risk youth, and youth living in Northern and remote communities. For more information, please visit us online at [actua.ca](https://www.actua.ca) and on Facebook, Instagram, and YouTube. &



CODING AND PROGRAMMING



DATA



COMPUTING AND NETWORKS



DESIGN



TECHNOLOGY AND SOCIETY



COURTESY OF HEATHER BRENNAN

◀ Kara Brisson-Boivin is the director of research at MediaSmarts

# Instilling the Fundamentals of Digital Literacy Education

BY SHARON ASCHAIK

**W**ith digital media literacy being essential to success in the 21<sup>st</sup> century, MediaSmarts is working to ensure educators can effectively cultivate this foundational competency in their students.

Established in 1994, the national non-profit focuses on research and evaluation, education, and awareness and outreach activities that support teachers, education administrators, and parents in cultivating digital media literacy in young people. The organization offers lesson plans connected to provincial and territorial curriculum requirements that teachers can use to empower students to engage critically and confidently with all forms of media. As well, MediaSmarts runs a Teacher Champion program, in which educators test the organization's newest digital media literacy education resources and provide their feedback.

“Digital media literacy is life-skills learning. It is a core competency that research shows is linked to employment success, economic success, and the general capacity to participate civically,” says Kara Brisson-Boivin, the director of research at MediaSmarts. Her role involves overseeing the planning, methodology, implementation, and dissemination of the key findings of the organization's research. She is also an adjunct research professor in the Department of Sociology and Anthropology at Carleton University, where she studies digital citizenship, digital equity, and digital well-being.

Brisson-Boivin says effective digital media education enables students to become competent digital citizens, which MediaSmarts defines as being realized when “people have the ability to access, use, understand and engage with media, including online

communities; apply critical thinking to media and networked tools; and possess the knowledge needed to do all these things ethically and effectively.” Becoming a competent digital citizen involves developing nine essential skills, which comprise the organization’s Digital Media Literacy Framework:

- **Reading media:** Understanding how media tell stories and communicate meaning
- **Media representation:** Understanding how media shape our perception of reality
- **Finding and verifying:** Knowing how to search for and authenticate information online
- **Ethics and empathy:** Knowing how to treat others online with kindness and respect
- **Privacy and security:** Determining which content to share online and with whom, and considering consent
- **Media health:** Analyzing messages about diet, health, relationships, sexuality, and body image; balancing on- and offline life
- **Consumer awareness:** Navigating the potential risks of online advertising
- **Community engagement:** Recognizing opportunities to use media for social activism
- **Making and remixing:** Creating media content in ways that respect legal and ethical boundaries

Becoming more adept at finding and verifying information online is a top priority for youth, according to the 2023 MediaSmarts report “Young Canadians in a Wireless World, Phase IV: Trends and Recommendations,” which surveyed 1,058 students in grades 4 through 11 across the country. The report also identifies a need to build students’ capacity in online privacy and security, as almost half of respondents said they never read privacy policies or terms of services, and 63% reported (mistakenly) believing that a privacy policy means a website will not share their personal information with others. Brisson-Boivin says educators must ensure students understand that any content they share on the internet can stay there forever and be copied or altered, employed for cyberbullying, or used in ways that could cause personal embarrassment, hurt others’ feelings, or pose risks to their safety.

“Students need to be taught about the permanence of digital content, and even if a platform makes it seem like it’s only available for 24 hours, it’s not—screenshots can be taken,” she says. “Part of this teaching involves having conversations with young people about why they are on a platform and what kind of experience they hope to have, so they can think critically about how they use it.”

Young people also need guidance to understand the pros and cons of using generative artificial intelligence to complete their schoolwork, Brisson-Boivin says. While students are already using artificial intelligence (AI) tools for tasks such as brainstorming ideas for projects or creating outlines for essays, she says students need to think critically about the biases and inequities that may be perpetuated by large language models.

“Let’s think about the kinds of ways AI is being trained, and which knowledge is included and not included, such as Indigenous ways of knowing. What are students missing out on when they use these technologies?” Brisson-Boivin asks. “Educators need to remind young people to treat AI as a tool and not a solution.”

Brisson-Boivin says the key thing for educators to remember about teaching digital media literacy is to incorporate it broadly into their teaching practice.

“The skills and qualities of digital citizenship overlap across multiple academic subjects,” she says, “and can be baked into your work no matter which subject or grade you teach.” &



COMPUTING AND NETWORKS



TECHNOLOGY AND SOCIETY

# A Conversation on Digital Citizenship

## With Beth Sampson

BY CHELSEA KOWALSKI

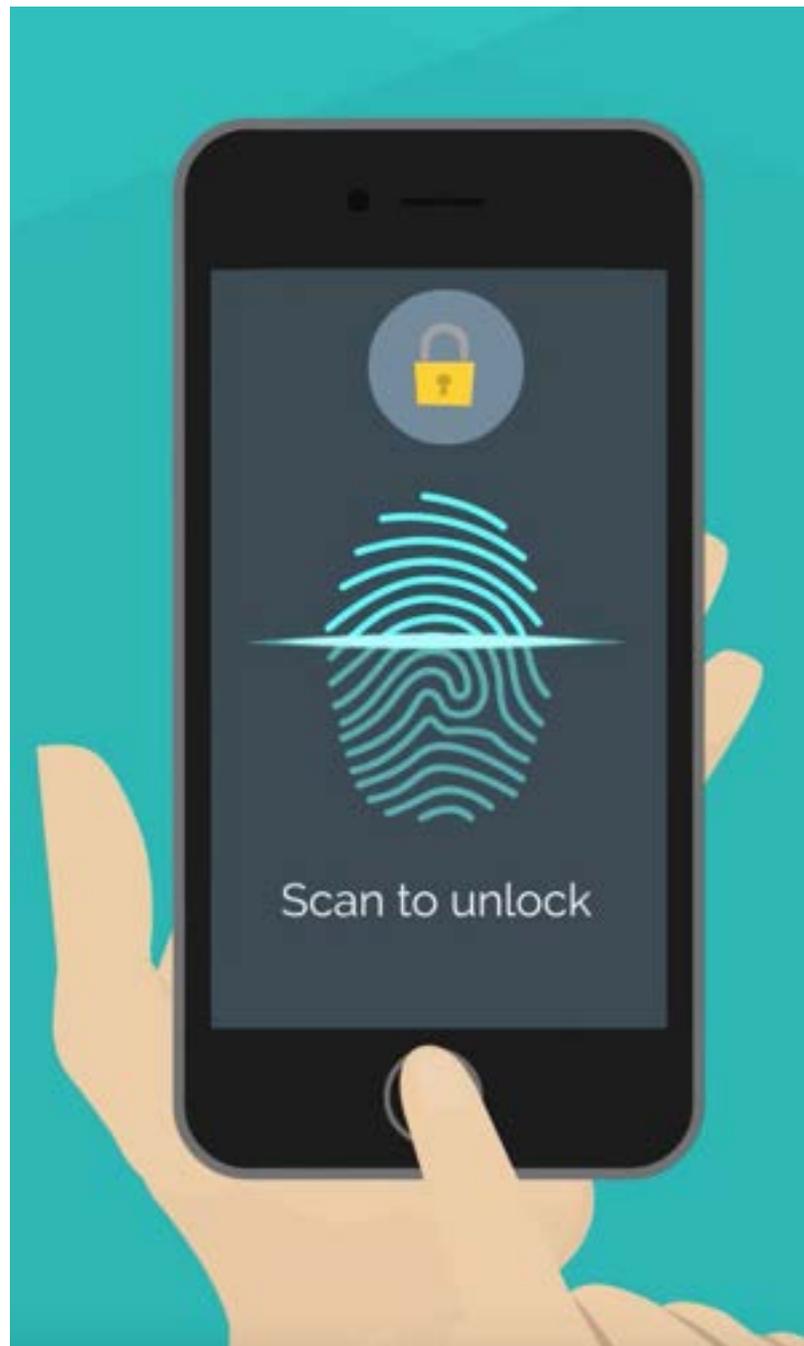
In 2008, Beth Sampson moved from Cape Breton, Nova Scotia, to Cambridge Bay, Nunavut, to work as a teacher. Now a senior math and science specialist at Kiilinik High School, she is very interested in digital citizenship and what it means for students in Nunavut. After obtaining her Master of Education in Sustainability, Creativity and Innovation degree from Cape Breton University, Sampson created Digitally NunavutED, a website for Nunavummiut students and educators to use when engaging with and learning about digital citizenship.

*Root & STEM* spoke with Sampson about her experiences being a student and an educator in and out of the digital space.

### HOW DO YOU DESCRIBE DIGITAL CITIZENSHIP?

I think about two things: What do experts say it means, and what do Inuit societal values say? For me, the “digital” part comes from the International Society for Technology and Education, which considers five competencies: to be inclusive, informed, engaged, balanced, and alert, with a greater goal of building a positive atmosphere and community in the online world.

For the “citizenship” part, I look to Nunavut. I’ve taught our aulajaaqtut [citizenship curriculum], which is based on Inuit concepts, namely inunnguiniq—the idea that as we grow and learn, we are trying to become whole humans who can function independently but still remain a positive and important part of their community.



## HOW IS DIGITAL CITIZENSHIP PREVALENT IN NUNAVUT TODAY?

When we think about digital citizenship, it's important to note that our access to the internet, in terms of data cappings and speed, has changed in the last few years. When I moved to Nunavut in 2008, we didn't have cell service. The pandemic was the start of the change for us. The world was stuck inside but that was particularly difficult for small communities in Nunavut, as we are used to being with one another all the time. We were spending more time online and some internet companies increased data caps. We saw the rise of Inuit content creators on TikTok and Instagram. Resilient Inuk, who is from Nunavut, speaks a lot about reconnecting to Inuit culture. Creators like Hovak Johnston and her son Brayden, who was originally from Iqaluktuuttiaq, did a lot of cultural teaching and language learning.

In a Nunavut community, Facebook is where generations come together. Our communities have a thriving digital economy on our Facebook pages, where people can share and sell creations or food. We are also excited about new apps, like the Inuinnaqtun dictionary app that reflects the work so many people have been doing to revitalize Inuinnaqtun, the language spoken in my community.

## WHAT ARE SOME CHALLENGES STUDENTS AND TEACHERS FACE WHEN IT COMES TO DIGITAL CITIZENSHIP?

For students, a lot of the challenges have to do with access to technology at home. In schools, we can standardize the available technology but if that technology isn't accessible to kids at home, that can limit things. Becoming comfortable with new technology and digital literacy requires time and space to just play. That might mean having after school clubs for that space to play without academic pressure.

Teachers are very lucky to have as much technology as we do in lots of our schools. At Kiilnik High School, we've always been really good at making sure we have reliable computers, cameras, and iPads that students can use. The biggest barrier is restric-

tions to access. Through our connection into the Government of Nunavut's network and system setup, increased restrictions took away access to useful sites like cbc.ca. While the security measures sound necessary, it's important for people in the public service to realize that the technology needs for schools are very different from the needs of the rest of the public. Protections and barriers that make sense in an office setting can be detrimental in a school setting. I get around these issues in my classroom by bypassing them, which means I pay for a modem and internet service in my classroom. Students just hook up to my wi-fi. That gets around the institutional barriers that have been created despite teachers being encouraged to incorporate more digital citizenship activities in their classrooms.

## HOW CAN WE MAKE SURE WE ARE BEING SAFE ONLINE, OR THAT WE'RE BEING GOOD DIGITAL CITIZENS?

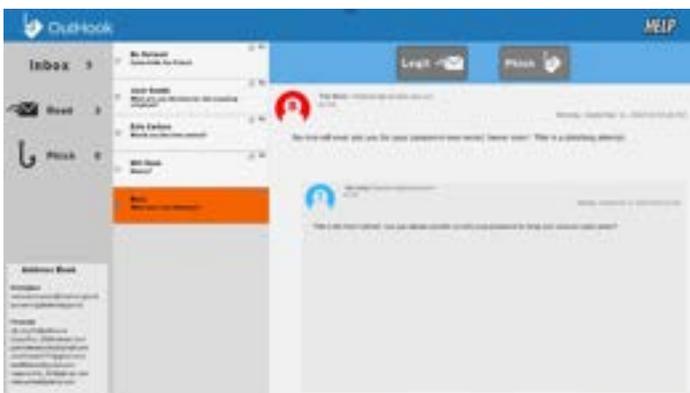
The biggest issues for kids at my school have been with navigating the complex world of online dating and courtship and how they can keep themselves safe from online harassment, sexual harassment, and unwanted information coming to them without their consent. As we get older, there are different kinds of security concerns, like identity theft or having financial information stolen. There are all kinds of safeties: personal, financial, emotional. How do we protect ourselves mentally from what can be a lot of confusing or hateful information online? That's the key question.

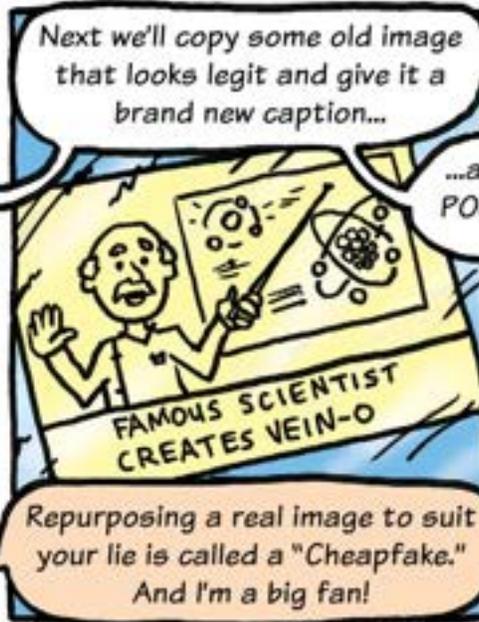
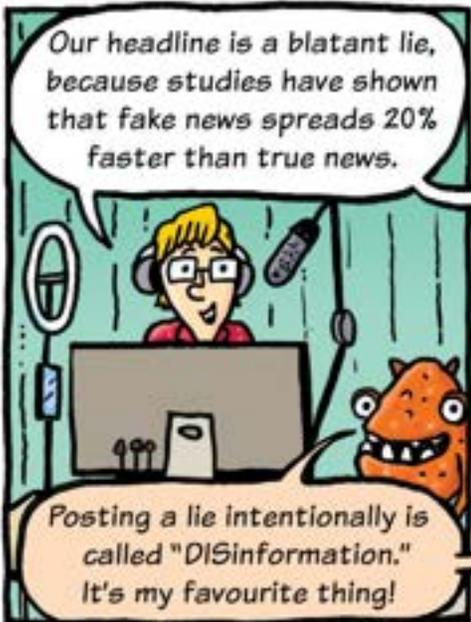
## ARE THERE RESOURCES OUT THERE FOR ANYONE WHO WANTS TO LEARN MORE ABOUT DIGITAL CITIZENSHIP?

I always say anybody who is Nunavummiut or Inuit should follow Piita Irniq on Facebook. He is, I think, our best example of a sweet elder who is really crushing it in the digital space. The way Piita speaks about his experiences, how he teaches, how he engages with others online, how he shares language, is a shining example of how you can take Inuit concepts of language and societal values and live them in a digital space. &

 COMPUTING AND NETWORKS

 TECHNOLOGY AND SOCIETY







HEY! Why'd you share this garbage?! There is no product called VEIN-O!

How do you know?



Because I took half a second to fact check it with a site like FactCheck.org or Snopes.com.

And then I did a reverse image search and instantly saw that the original picture was about toothpaste.



Now I have to comment on your post so our friends don't get tricked like you did.

This product does not exist. See link here...



WE HAVE ENGAGEMENT! Troll, you're up!

TAP TAP TAP TAP TAP

Facts don't care about your feelings! Big Pharma is paying people to deny VEIN-O exists!



What?

Source? Trust me, bro?

TAP TAP TAP TAP TAP

Don't feed the trolls, Sam! The algorithms reward any engagement. Just delete your original post.



Aww, they deleted the post. I was just getting started.

That's, okay, T. Our A.I. bots will continue to share the story 24/7 to anyone who doesn't use BotSentinel to check if an account is run by a human or a bot.



Hey, other accounts are sharing the VEIN-O story--

Forget it, Sam. Let's go over to my house and bake some cookies instead of looking at screens all day.

YES! That's something we can share safely!



Well, that's all the time we have today, Chat. Be sure to buy our merch and--

CHARLIE!!



I need you to come upstairs and clean your room!

MOOOOM! I'm streaming right now!!

HAHA, you're cooked, CHARLIE! Troll out!

Poof!

# Understanding and Addressing Online Hate

## Key Terms

Understand how these forms of online hate have been used against identifiable groups, including 2SLGBTQIA+ individuals and organizations in the colonial state of Canada

### Online Hate

Content that is posted and/or shared on the internet that is rooted in hatred of an identifiable group.

Online hate targets identifiable groups based on any combination of:

- Racism
- Xenophobia/Discrimination based on immigration status
- Transphobia
- Misogyny
- Queerphobia
- Religion
- Ableism
- Ageism
- Other forms of marginalization



### Online Harassment

An individual's or group's use of technology to harass, intimidate, or harm another person.

### Doxxing

Publicly sharing an individual's personal information (e.g., photos, address, phone number, job information, IP address, etc.) online to intimidate them and/or pressure them to stop participating in certain activities, such as attending protests or creating inclusive spaces for 2SLGBTQIA+ people.

### Swatting

When an individual contacts emergency services with a false claim of an emergency, such as a hostage situation, death threat, or bomb threat. The intention is the targeted person(s) or organization(s) is harassed, harmed, and/or humiliated when the police show up.



### Misinformation

Untrue information that is spread to others



### Disinformation

Untrue information that is spread with the intention of causing harm

# DIGITAL ACCESS BARRIERS



## ENVIRONMENTAL BARRIERS

Privacy can be especially important for 2SLGBTQIA+ people and some do not have a secure and safe space to participate in digital programming. Young people may live at home with homophobic/transphobic family. Older 2SLGBTQIA+ adults living in long-term care or who rely on home-care may conceal their sexual orientation in order to avoid assumed heterosexism, homophobia, or transphobia when receiving care.



## CONNECTION BARRIERS



Accessing the internet is a luxury. Many do not have the funds to access personal devices or set up an internet or cellular data plan. Others may live in remote areas that are beyond the reach of existing internet and data networks. According to Statistics Canada in 2022, only 68% of Inuit people have mobile internet access, and 73% of people that have internet said they experience “constant problems” with quality and speed.



## DIGITAL LITERACY BARRIERS

Some people can get online, but they can't navigate digital sources. Many people are not experienced internet users and may be unsure how to find what they need. Others can have difficulty accessing resources because websites can be unintelligible to those with physical, or cognitive disabilities and online spaces are not always set up with disability access needs in mind.



## LANGUAGE BARRIERS

For many, it is hard to find information online that is written in their native language or that speaks to their cultural context. The internet is written predominantly in English, and finding well-translated resources is time-consuming. Having limited digital literacy and facing language barriers at the same time is often referred to as the “double digital divide.”



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# Stay Safe, Stay Aware

BY VIVIAN LEE

Imagine waking up one morning to a flood of messages from your friends and family—and everyone is mad at you. The messages tell you that a new Facebook account is claiming that it's a replacement of your real account. This new account looks just like yours—it has the same profile information and photos, and has been adding all the people you know. After your trusting folks accept the new account invite, they all get several messages that ask them to click on a link to sign up for a “special cryptocurrency opportunity.” The link is a virus and now some of your friends' accounts are compromised too.

This is an example of **account cloning**. It happens all the time, and it's one of the most common ways a hacker can steal information quickly; by abusing the trust a user has with their community connections. Being scammed is a terrible experience, but having it affect those around you as well is even more difficult. Many people are too embarrassed by the situation or just don't have the digital safety skills to fix the problem. What can be done in a situation like this?

Practising safety online starts with practising safety in person. Talk to your family and friends about how to maintain, and stay aware of, a strong digital footprint. Don't forget to keep an eye out for the older adults in your life. If you have tips and tricks to stay safe on the internet, share them with your community! If you get into trouble online, know that you are not alone. Online harassment and cyber-criminals thrive when you don't speak up. This advice is for folks of all ages—especially adults! We need to lead by example and show the next generation that open communication and trusting your community is the best way to keep each other safe. Don't be afraid to ask for help.

The Open Digital Literacy and Access Network (ODLAN) wants to build a better internet, and ensure ordinary people have access to the skills and knowledge needed to prevent and respond to digital identity attacks. ODLAN is a Canadian-centric non-profit organization based in Ontario, with a mission to break down digital access barriers and provide digital safety resources to organizations that serve 2SLGBTQIA+ communities. ODLAN provides free educational content on digital literacy, accessibility, and online safety via [odlan.ca](http://odlan.ca), along with an ongoing series of research articles on understanding and addressing online hate that targets 2SLGBTQIA+ organizations. They also offer custom digital safety training programs for members of such organizations who may find themselves at risk of being attacked online. With the current rise in right-wing extremism, organizations are finding themselves more and more likely to need a better understanding of how to keep themselves and their communities safe. ODLAN wants to provide the training and support organizations need to operate safely and effectively, allowing them to take care of their communities without having to watch their own digital backs while they're doing the difficult work of providing help where it's needed. &



COMPUTING AND NETWORKS



TECHNOLOGY AND SOCIETY



DESIGN



COURTESY OF AMPERE

# Digital Kit

## Past Issues

If you missed past issues of *Root & STEM*, you can find them online at [✦ rootandstem.ca](https://rootandstem.ca)

We have developed additional digital resources for educators to use in the classroom that connect to the concepts of digital citizenship—including podcasts and interactives. They can be accessed online via the links that follow.

### Root & STEM Podcast

This podcast expands on *Root & STEM* content and invites subject experts from each issue of the magazine to share their knowledge. The current series explores the theme of computer studies in relation to STEAM education. Episodes are approximately 15–30 minutes long and are available on the Ampere website or your streaming platform of choice.

✦ [rootandstem.ca/learn/the-root-stem-podcast](https://rootandstem.ca/learn/the-root-stem-podcast)

### Root & STEM App

Filled with the same informative articles, podcasts, and lesson plans as its printed counterpart, the Root & STEM educational app is a free digital resource for K–12 educators and learners of all ages. The app puts the magazine's STEAM content and curriculum in the palm of your hand. Interactive elements are added regularly. Available for download on the App Store and the Google Play Store.

### Harnessing the Benefits: The Digital World Podcast

This three-episode series designed for Grade 9–12 students highlights the advantages of technology while introducing some potential dangers of the online world and how to avoid them.

Each episode focuses on one popular aspect of the digital world: artificial intelligence, social media, and online learning. Each episode explains how these relatively new technologies can benefit students in and out of the classroom, how others are using the technology, and how to implement digital safety to harness the benefits of the digital world.

✦ [rootandstem.ca/learn/harnessing-the-benefits/](https://rootandstem.ca/learn/harnessing-the-benefits/)

### All About AI

This video takes students on a journey through time to learn about the history of artificial intelligence (AI). It explores how AI came to be and profiles key scientists who first thought of creating intelligent computers, which are capable of using logic and mimicking thought processes to solve problems. Students learn what early models of AI looked like, what the intelligent machines of the past were, and how far technology and AI have come in the last two decades. The video also focuses on where we currently stand with AI-powered technology and what the future holds for humans and AI.

✦ [www.youtube.com/watch?v=iencUcExpRo](https://www.youtube.com/watch?v=iencUcExpRo)

### Digital Citizenship Series

This educational series is designed to empower both teachers and students with the right knowledge and skills to thrive in the digital age. In a world where technology is constantly evolving, understanding how to navigate the online space responsibly and safely is more important than ever, so each episode tackles a crucial aspect of digital citizenship, providing valuable insights and practical tips.

✦ [rootandstem.ca/learn/digital-citizenship-video-series](https://rootandstem.ca/learn/digital-citizenship-video-series)

## LESSON 1

# Safe Chat, Bad Chat—Introduction to Online Safety and Sharing

**Author:** Ampere

**Level:** Grades K to 3

## Curriculum Links

### Ontario:

This lesson aligns with provincial language arts curricula.

### Language Arts (Grades K–3):

A1. Transferable Skills

A2. Digital Media Literacy

B1. Oral and Non-Verbal Communication

B2. Language Foundations for Reading and Writing

C2. Comprehension Strategies

D1. Developing Ideas and Organizing Content

### Nunavut:

This lesson aligns with territorial English language arts curricula.

### English Language Arts

2.OC.2.1 Communicate thoughts, feelings, information, and opinions through well-formed sentences.

2.OC.3.1 Collaborate and work together with peers to solve problems in a variety of group contexts.

2.R.1.1 Respond to a variety of texts by expressing feelings, questions, opinions, and observations.

2.W.2.2 Produce texts about topics, experiences, and to tell stories, including supporting details.

## Learning Goals

At the end of this exercise, students should be able to:

- Understand and explain what online safety is
- Communicate information that should not be shared online
- Communicate the types of things to look out for to remain safe online

## Materials

- Chart paper
- Markers
- Copies of “Good Chat, Bad Chat” from Kids Health Org (see Resources)
- Pencils
- Erasers

## Vocabulary

**Internet:** A global computer network that provides a variety of kinds of information and methods of communication. It consists of a series of networks that are interconnected using communication protocols.

**Online:** (Of an activity or service) Available on or performed using the internet or other computer network.

**Personal information:** Information that cannot be used to identify a person easily because it is also true for many other people (e.g. hair colour; hometown).

**Private information:** Information that can be used to identify a person because it is unique to them (e.g. full name; home address).

**Safety:** The condition of being protected from or unlikely to cause danger, risk, or injury.

### Teacher’s Notes

- To assist visual learners: Provide visual aids such as large printed emotion word cards in all languages spoken in the classroom (e.g. English and Inuktitut for Nunavut classrooms), symbols, and picture books
- To assist kinesthetic learners: Provide tactile assistance, e.g. by drawing on large surfaces like a whiteboard or the floor, to stimulate learning through movement
- To assist students with limited language proficiency: Pair them with a peer who is more comfortable with the language or offer additional support using emotion-based role-playing or physical cues (e.g., facial expressions or body movements).

## Classroom Instructions

### Minds On! What Is the Internet?

1. Have a class discussion about the internet. Ask students to raise their hands if they have been online before. Remind students that not everyone has access to the internet and that's OK.
2. Ask students how they:
  - a. Access the internet
    - i. via smartphones, apps, laptops, tablets, gaming consoles
  - b. Interact with others online
    - ii. playing games, connecting with friends
  - c. What they can find on the internet
    - iii. games, information, friends, family
3. Ask students how the internet can be of assistance to them (finding information, learning about topics they are interested in, staying in touch with friends and family). Lead with an example (e.g., "I use the internet to talk to my family in another country/province").

### How Can We Be Safe Online?

1. What potential dangers might students encounter when using the internet? Have the class brainstorm online activities that could be harmful. Track answers using a whiteboard, a smartboard, or chart paper.
  - a. Examples of dangers include interacting with strangers, encountering bullying behaviour, and harmful topics. (Discuss harmful topics such as bullying and harassment.)
2. Show the class the following video, which discusses internet safety and focuses on not sharing private information such as full names, phone numbers, addresses, and other information that can identify individuals.
  - b. [youtube.com/watch?v=MjPpG2e71Ec&t=2s](https://www.youtube.com/watch?v=MjPpG2e71Ec&t=2s)

### Good Chat, Bad Chat

1. This exercise considers examples of online situations in which students need to be aware of the types of information that is safe or unsafe to share.
2. In each example, students are shown a username and a chat message sent by that user. Students will decide whether the question in each message is asking for information that should or should not be shared. If the chat asks for information that it is OK to share, they should mark that chat with a happy face. If it asks for information that it is not safe to share, they mark a sad face under the example.
3. Read out the examples one by one. Encourage students to think about the usernames and what the chat is asking them before they answer. Students can do this activity individually or in pairs.
  - a. For example, information such as including our full name, address, hometown and pet's name in a username can be harmful.

- b. Sharing personal information in a username can allow people to find us elsewhere online, or hack into our accounts.
4. After going through each example, as a group go through them and decide if there should be a happy or sad face in each box.

### Consolidation

1. Make an Online Safety chart to hang up in the classroom that can be referred to throughout the year.
2. Using chart paper, create two lists, one labelled "safe" and the other "unsafe."
3. Ask students what is good information to share, and what is unsafe information to share. After discussion, list the examples on the chart.

## Resources

- Internet Safety for Kids K-3  
[youtube.com/watch?v=89eCHtFs0XM](https://www.youtube.com/watch?v=89eCHtFs0XM)
- Private and Personal Information  
[youtube.com/watch?v=MjPpG2e71Ec&t=2s](https://www.youtube.com/watch?v=MjPpG2e71Ec&t=2s)
- Good Chat, Bad Chat  
[kidshealth.org/classroom/3to5/personal/safety/online\\_safety\\_handout2.pdf](https://kidshealth.org/classroom/3to5/personal/safety/online_safety_handout2.pdf)



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LESSON 2

# Healthy Media Choices & Cyberbullying

**Author:** Ampere

**Level:** Grades 3 to 5

### Curriculum Links

**Ontario :**

This lesson aligns with provincial language arts and science & technology curricula.

**Language (Grades 3–5):**

- A2. Digital Media Literacy
- A3. Applications, Connections, and Contributions
- B1. Oral and Non-Verbal Communication
- B2. Language Foundations for Reading and Writing
- C2. Comprehension Strategies
- D1. Developing Ideas and Organizing Content

**Science & Technology (Grades 3–5):**

- A3. Applications, Connections, and Contributions
- B1. Relating Science and Technology to Our Changing World

**Nunavut:**

This lesson aligns with territorial physical health and wellness education curricula.

**PhysEdHealthWellness**

**Healthy Living**

**(Grade 4):**

4.HL.3.2 Demonstrate a personal understanding of how external factors (peer pressure, availability of healthy

foods, environment, etc.) influence decision-making through the creation of a mini poster of four external factors that personally influence them.

4.HL.3.3 Explore the benefits and risks associated with digital technology by creating a list using co-constructed criteria.

**(Grade 5):**

5.HL.3.3 Demonstrate an understanding of safe and healthy uses of digital technology through an online research poster board.

**(Grade 3):**

- 3.SE.1.1 Explain how emotions provide information about needs, actions, and experiences.
- 3.SE.1.2 Experiment with a variety of strategies and techniques to regulate emotions.
- 3.SE.1.3 Demonstrate knowledge of the emotional wellness of self and others by creating a checklist of six ways they can support their own and others' personal wellness.
- 3.SE.3.3 Investigate different ways that communities make decisions and resolve conflicts.

**(Grade 4):**

- 4.SE.1.3 Demonstrate personal knowledge of strategies that can be employed to support others' emotional wellness through personal interactions with classmates.
- 4.SE.3.2 Develop assertiveness strategies to stand up for themselves and others using modelled behavior.
- 4.SE.3.3 Develop an awareness of the physical and emotional impacts of negative or unhealthy relationships.

**(Grade 5):**

- 5.SE.2.2 Demonstrate an understanding of the positive and negative effects social media and media in general can have on self-concept. Show evidence of understanding through an essay or a class presentation.
- 5.SE.3.2 Demonstrate an understanding of the harmful effects of bullying and harassment. Show evidence of understanding through research and class presentation.
- 5.SE.3.3 Demonstrate an understanding of strategies used to safely respond to bullying and harassment through an essay or a class presentation.

### Learning Goals

- Identify what cyberbullying is and understand how it can be prevented
- Begin to develop an understanding of a healthy media balance
- Learn the “What? When? How Much?” framework for describing media choices

## Materials

- Device to watch a YouTube video and take a quiz
- Writing utensils
- Paper

## Vocabulary

**Cyberbullying:** The use of electronic communication to bully a person, typically by sending messages of an intimidating or threatening nature. Cyberbullying occurs often on social media platforms such as Facebook, Instagram, Snapchat, and X.

**Victim:** A person who is harmed, injured, or killed as a result of a crime, accident, or other event.

**Bully:** A person who uses superior strength or power to harm, influence, or intimidate those who they see as weaker than them.

**Bystander:** A person who is present at an event or incident but does not take part or stop it from happening. This can include someone who is aware of cyberbullying but does not take any action to stop it.

## Classroom Instructions

### The Internet: The Good and the Bad

1. **Introduction:** The internet is an amazing resource for finding information, talking to friends and loved ones, learning new things and so much more! It has made a lot of our lives easier and has given us the ability to be more resourceful. However, the internet isn't always used for good.

*Lead the class in a discussion. What are some good things about the internet? What are some bad things that occur because of the internet? Are we able to fix bad things/problems that occur because of the internet? How do we protect ourselves from harm online?*

2. **Cyberbullying:** One thing many people have to deal with online is cyberbullying. **Ask:** *What makes someone a bully? What is cyberbullying? Have you ever been cyberbullied? Why do you think cyberbullying is so common? How can we help someone who is being cyberbullied?*
  - Have the class take this quiz individually or in groups. If done in groups, allow students to discuss and vote on the options before submitting answers:  
[quia.com/quiz/2959705.html?AP\\_rand=2109904206](https://www.quia.com/quiz/2959705.html?AP_rand=2109904206)

Bullying can have a serious effect on a victim's emotional well-being. The wide-spread use of the internet has made cyberbullying a huge problem.

- Examples of cyberbullying include:
  - Sending mean texts, emails, or instant messages
  - Prank calling someone's phone to scare them, hurt their feelings, or make fun of them
  - Hacking into someone's gaming or social media accounts and pretending to be them or taking information from them

- Being rude or mean to someone in an online game
- Telling someone's secrets or spreading malicious rumours about them online
- Pretending to be someone else/hiding your identity and spreading mean messages, secrets or rumours
- Making fun of someone's culture, for example by posting memes that mock that culture
- Creating websites that rate someone's appearance

3. Discuss two or three scenarios from the document at [pinnguaq.com/learn/cyberbullying](https://pinnguaq.com/learn/cyberbullying) with the class. Have students come up with their own responses, either in groups or with the class as a whole. Have students jot down how they would feel if they were the victim in each scenario.

### What Is Social Media?

1. Social media, with the right intentions, can be a fun and interactive way to connect with friends, family, and others online. It often makes us feel closer even though we are far away from each other. Social media allows us to share information, ideas and content with others easily. Users can create personal profiles to express themselves and allow others to find them.

Social media can also affect us negatively. Many cyberbullies can be found on social media, and users must be careful of individuals who spread fake news or information.  
*Discuss: What are some social media platforms you know of?*

2. For many in this age group, the most popular social platforms are:
  - Roblox
  - Minecraft
  - Animal Crossing

Other popular social platforms require a parent's or guardian's permission to play or use, if the user is under the age of 13.

These include:

- Youtube Kids
- Messenger Kids
- Kidz World
- TikTok

Other very popular social media sites require users to be 13 or older:

- Instagram
- X (previously Twitter)
- Snapchat
- Facebook
- Reddit
- Discord
- Tumblr

These age requirements are in place to protect users and there are guidelines/recommendations as to how often these platforms should be used.

**Making Healthy Media Choices**

1. Start a discussion with students with the following prompt:  
*Being on the internet and using social media can affect our health in good and bad ways. Think about watching your favourite TV show—that could make you feel happy, but spending too much time watching TV could make you feel sad or anxious because you miss out on other activities or get less sleep. Spending too much time on social media can also make you feel more tired, or have an impact on your happiness if you don't get as many likes as you hoped, or if someone is being mean to you or cyberbullying you.*
  - What are some of the ways the internet and social media affect you?
2. Have students watch this short video about media choices: [commonsense.org/education/videos/my-media-balance](https://commonsense.org/education/videos/my-media-balance)  
 It's important to understand that there is balance to everything, and to make sure there is a balance when using media. We also want to make choices that affect those around us in a positive way. That means not bullying people online, making sure we spend time with our loved ones and friends, going out and exercising, and making sure we get important things, like homework and chores, done.

**Assessment**

Informal assessment:

- Have students create a poster of “Healthy Media Choices” and share it with teachers and peers as a group
- Have students create a presentation of the “Harms of Cyberbullying” and share it with the school during assembly

**Resources**

- My Media Balance (Quick Activity) [commonsense.org/education/digital-citizenship/lesson/my-media-balance-quick-activity](https://commonsense.org/education/digital-citizenship/lesson/my-media-balance-quick-activity)
- My Media Choices [commonsense.org/education/digital-citizenship/lesson/my-media-choices](https://commonsense.org/education/digital-citizenship/lesson/my-media-choices)
- Bully Stoppers – Bullying and cyberbullying for teachers [education.vic.gov.au/about/programs/bullystoppers/Documents/res1/story\\_html5.html](https://education.vic.gov.au/about/programs/bullystoppers/Documents/res1/story_html5.html)
- Stop Bullying – What is cyberbullying? [stopbullying.gov/cyberbullying/what-is-it](https://stopbullying.gov/cyberbullying/what-is-it)
- Stop Bullying – Prevent cyberbullying [stopbullying.gov/cyberbullying/prevention](https://stopbullying.gov/cyberbullying/prevention)
- Resource – Indigenous youth cyberbullying [suicideinfo.ca/local\\_resource/indigenous-youth-cyber-bullying](https://suicideinfo.ca/local_resource/indigenous-youth-cyber-bullying)
- World Vision – How to use technology to be kind [worldvision.org/child-protection-news-stories/technology-kind-cyberbullying](https://worldvision.org/child-protection-news-stories/technology-kind-cyberbullying)

- Stop Bullying – Can kindness overcome bullying? [stopbullying.gov/blog/2017/07/26/can-kindness-overcome-bullying](https://stopbullying.gov/blog/2017/07/26/can-kindness-overcome-bullying)
- Resource – Kindness is Contagious documentary [kindness-is-contagious.com](https://www.kindness-is-contagious.com)
- WE – Toolkit for rising above bullying (PDF) [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://cdn.we.org/wp-content/uploads/2017/07/WRA\\_CampaignGuide\\_CAN.pdf](https://chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://cdn.we.org/wp-content/uploads/2017/07/WRA_CampaignGuide_CAN.pdf)

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## LESSON 3

# Your Digital Footprint

**Author:** Ampere

**Level:** Grades 6 to 8

## Curriculum Links

### Ontario:

This lesson aligns with provincial language arts and science and technology curricula.

### Language Arts (Grades 6-8):

A1. Transferable Skills

A2. Digital Media Literacy

B1. Oral and Non-Verbal Communication

B2. Language Foundations for Reading and Writing

C2. Comprehension Strategies

D1. Developing Ideas and Organizing Content

### Science and Technology (Grades 6-8):

A3. Applications, Connections, and Contributions

B1. Relating Science and Technology to Our Changing World

### Nunavut:

This lesson aligns with territorial language arts curricula.

### English Language Arts, First Language, Grade 6

6.OC.2.2 - Plan, rehearse, and deliver organized oral presentations for various purposes and audiences.

6.OC.3.1 - Collaborate and work together with peers through collaborative decision-making and consensus building.

6.R.1.2 - Reflect on comprehension strategies used to monitor and extend understanding.

6.R.1.3 - Identify bias and stereotypes within texts from different perspectives, considering how personal and social context can shape one's understanding.

## Learning Goals

- Understand and convey what a digital footprint is
- Acknowledge what online safety is
- Convey what privacy is online and how it contributes to a digital footprint

## Materials

- Chart paper
- Markers
- Blank Facebook page template (found in Resources)
- Example of Facebook page (created by educator)
- Pencil crayons
- Magazines
- Scissors
- Glue sticks
- Lined paper

## Vocabulary

**Digital Footprint:** Information about a person that exists on the internet as a result of their online activity.

**Privacy:** The state of being free from public attention.

**Perception:** A way of regarding, understanding, or interpreting something; a mental impression.

**Reputation:** The beliefs or opinions that are generally held about someone or something.

### Teacher's Notes

Differentiation and differentiate instructions:

- To assist visual learners: Provide visual aids such as large printed emotion word cards in both Inuktitut and English, symbols, and picture books
- To assist kinesthetic learners: Provide tactile assistance, e.g. by using tracing materials or by drawing on large surfaces like a whiteboard or the floor) to stimulate learning through movement
- To assist students with limited language proficiency: Pair them with a peer who is more comfortable with the language or offer additional support using emotion-based role-playing or physical cues (e.g. facial expressions or body movements)

Classroom Instructions

Minds On!

1. Before beginning this lesson, ask students if they have a presence online, whether through social media, gaming networks or even texting. If they answer “yes,” explain that they have a digital footprint. If “no,” explain that as they begin to use the internet more, they will gain a digital footprint.
2. Before diving into the term “digital footprint,” ask the class to define what they think it means.
3. Follow up with the definition of digital footprint, along with this video: [youtube.com/watch?v=ottnH427Fr8](https://www.youtube.com/watch?v=ottnH427Fr8).

Perception and Privacy

1. As a group, discuss how what we post online might affect how people view us. Brainstorm types of posts or words that might be harmful to our digital footprint. Record the answers on chart paper. *Examples: Bullying, hate speech, misinformation, plagiarizing.*
2. Discuss how what we post online could be harmful to our privacy. What are things we should not post on social media or tell other people? Why could telling someone certain things be harmful to us? Record these words on another piece of chart paper. *Examples could include: home address, passwords, school information.*

Here is a video on social media safety:  
[youtube.com/watch?v=vPIWDFtP0T0](https://www.youtube.com/watch?v=vPIWDFtP0T0)

Create Facebook Pages

1. Give students the “Facebook page” handout. Project an example page on the board.
2. Explain to students that they will create a fake profile for a celebrity, business, or athlete, or a random person.
3. Students can colour the pages or paste pictures from magazines to create their profiles.
4. Encourage students to reflect on the earlier discussion of privacy and digital footprints, and to add posts or pictures they think would harm this person’s or business’s “look.” (Remind the class to keep it appropriate!)

Spot the Harm

1. After students have completed the pages and written their names on them, collect them and divide them into groups (group size can vary based on the size of your class).
2. Distribute the Facebook pages to other groups. (Make sure they do not receive their own work.)
3. Have students read through the pages they have received, and identify which parts of the page could be harmful as part of a digital footprint.
4. Encourage students to discuss within their groups, or with a partner, why they think a particular post, comment, or photo is harmful on the profile they received.

Group Discussion

1. Bring the class back together and have students present their findings.
2. Have the creator of each Facebook page confirm whether the other students identified the harmful material they included.
3. Have the creator explain why they selected that post, comment, or photo. For example “I said that Lionel Messi posted an AI video of him scoring a goal, claiming it was real. If people found out it was fake, they would think he is a phony.”

Consolidation

1. Return the profiles to their creators.
2. On the back of each profile, or on lined paper or in a journal, have students identify the harm they chose to convey on their page.
3. Have students provide a rationale for their selection(s) and explain how this content could be harmful to this person/business.

Assessment

Informal assessment:

- Have students roleplay different scenarios in the classrooms for a person who might be a victim of bullying, hate speech, or false rumours
- Written work:
- Have the students write an essay about digital footprints, focusing on the consequences of bullying, hate speech, or spreading misinformation on the internet

Resources

- What’s in Your Digital Footprint? [commonsense.org/education/videos/whats-in-your-digital-footprint](https://www.commonsense.org/education/videos/whats-in-your-digital-footprint)
- The Power of Digital Footprints [commonsense.org/education/digital-citizenship/lesson/the-power-of-digital-footprints](https://www.commonsense.org/education/digital-citizenship/lesson/the-power-of-digital-footprints)
- Facebook Profile Template [teacherspayteachers.com/browse/free?search=facebook%20profile%20template](https://www.teacherspayteachers.com/browse/free?search=facebook%20profile%20template)
- Teen Voices: Oversharing and Your Digital Footprint [youtube.com/watch?v=ottnH427Fr8](https://www.youtube.com/watch?v=ottnH427Fr8)
- Social Media Safety Tips [youtube.com/watch?v=vPIWDFtP0T0](https://www.youtube.com/watch?v=vPIWDFtP0T0)

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## LESSON 4

# Artificial Intelligence & Plagiarism

**Author:** Ampere

**Level:** Grades 9 to 12

## Curriculum Links

**Ontario (Grades 9 to 12):**

This lesson aligns with provincial language arts and computer science curricula.

**Computer Studies**

**(Grade 10):**

- A2. Digital Technology and Society
- B3. Cybersecurity and Data
- B4. Innovations in Digital Technology

**(Grade 11):**

- D2. Exploring Computer Science

**(Grade 12):**

- D2. Ethical Practices
- D3. Emerging technologies and Society

**Technological Education (Grade 9 & 10):**

- B1. Fundamentals of Technological Development
- B2. Impacts of Technology

**English (Grade 9):**

- A1. Transferable Skills
- A2. Digital Media Literacy
- D2. Creating Texts

**English - Writing (Grade 10-12):**

- D1. Developing and Organizing Content

**Nunavut:**

This lesson aligns with territorial language arts and computer science curricula.

**Career & Technological Studies:**

**Computing Science (Computer Science):**

- 1.2.7 describe the general areas of interest of computer science
- 1.4 describe some of the misconceptions associated with computer science

**English:**

**English Language Arts 10-1**

I want to explore literature and develop strong communication skills

**English Language Arts 20-1**

I want to explore literature more deeply and develop my communication skills

**English Language Arts 30-1**

I want to demonstrate critical thinking about literature and communication

## Learning Goals

At the end of this exercise, students should be able to:

- Define and understand the distinction between artificial intelligence (AI) and generative AI
- Identify potential impacts of AI
- Discuss how to use AI ethically

## Materials

- Device to watch YouTube videos
- Writing utensil
- Paper

## Vocabulary

**Plagiarism:** The use of another person's work or ideas without giving them credit.

**Artificial intelligence (AI):** A computer program or application that can carry out tasks that normally require human intelligence.

**Generative AI:** A type of artificial intelligence that can produce text, images, and audio.

## Classroom Instructions

**AI and Generative AI: What are they?**

1. Begin with a class discussion.

**ASK:** *What is AI? Does anyone know the difference between AI and generative AI? What*

*are some things that are easier for computer systems to do than they are for humans? What are things that humans can do that would be hard for AI or computers to do?*

2. AI is an acronym that stands for artificial intelligence. Artificial intelligence refers to computer programs or apps that can do tasks that typically require human intelligence to execute. A technological system is considered to be AI when it displays attributes of intelligence that are typically exhibited by living beings. This kind of intelligence includes things like processing language, understanding pictures, and detecting patterns. As technology continues to advance, the use of AI has become more relevant to and useful in our daily lives.
3. Generative AI is a specific kind of AI. It is able to create content, like text, images, and audio.
4. Show the class this video from *The Wall Street Journal's Tech News Briefing Podcast*: [youtube.com/watch?v=qqxdsooKggE](https://www.youtube.com/watch?v=qqxdsooKggE).
5. Have students complete the Creative AI handout (last page of this lesson plan) as the video plays.

**Plagiarism**

1. The use of Generative AI is becoming more and more common as technology advances, and it has begun to shape the world around us. Generative AI is able to help us in many ways, but it's important to know the appropriate times to use it. Using certain generative AI tools in school and at work could lead to issues like plagiarism and underdeveloped thinking/writing skills.

**Plagiarism is the act of taking someone else's work or ideas and passing them off as one's own.** It is considered fraud and can lead to consequences for students such as lower grades, automatic failure, or even academic suspension, probation, or expulsion.

It's important that AI programs be considered only as tools that can assist us in completing our creative processes. Remember, generative AI is only a compilation of the information that it has been "fed" or trained with; it doesn't naturally think on its own. So it's using other peoples work and compiling it into one in order to give a complete answer. In other words, it is not original and cannot be claimed as work belonging to the user.

2. Provide an example in which a student uses ChatGPT to write an entire assignment. The student only changes a few words. Discuss the following with the class and/or have students write out their own responses.
  - Is it OK to do this? Why or why not?
  - Have you ever heard of or experienced a situation like this?
  - What if the ADA cited the tool as a resource?
  - What if AI was used only to create an outline of the project?
  - What if a teacher used AI to give students feedback/marks on their work?
  - Should the use of AI be banned in school?

**Assessment**

**Informal assessment:**

- Have students write a five-paragraph persuasive essay that considers the question: Should AI Be Banned in Schools? Have students create a presentation and share it with the class.

**Formal assessment:**

- Have students co-create success criteria with teachers and peers to manage and track their own learning.

**Resources:**

- Artificial Intelligence: Is It Plagiarism? [commonsense.org/education/digital-citizenship/lesson/artificial-intelligence-is-it-plagiarism](https://www.common Sense.org/education/digital-citizenship/lesson/artificial-intelligence-is-it-plagiarism)

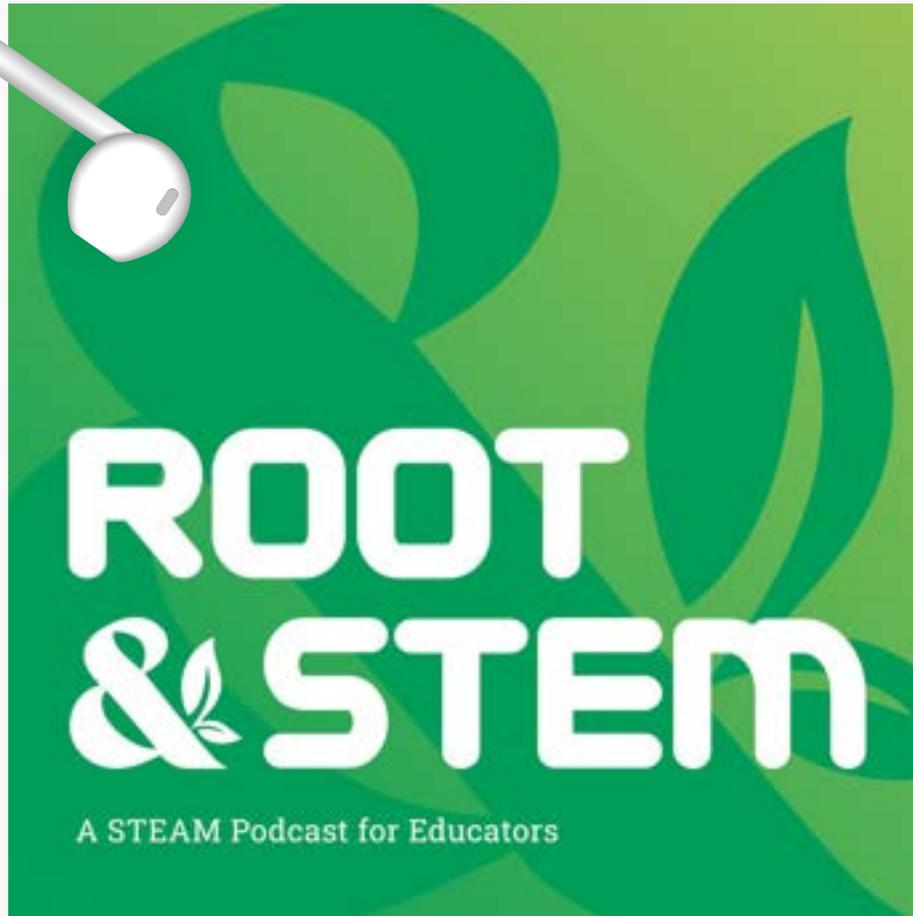


### What Can AI Create?

Listen to *The Wall Street Journal's Tech News Briefing* podcast on [What to Know About OpenAI's Chatbot](#). Capture your thoughts in the chart below.

	THINGS I HAVE LEARNED	THINGS THAT PUZZLE ME, OR QUESTIONS I STILL HAVE
WHAT IS CHATGPT AND WHAT CAN IT DO?		
HOW WAS CHATGPT TRAINED?		
WHAT ARE SOME OF THE LIMITATIONS OF CHATGPT?		
WHAT ARE EXAMPLES OF OTHER AI TOOLS THAT ARE SIMILAR TO CHATGPT? WHAT DO THEY DO?		

# Discover Diverse Voices in STEAM Learning



Expanding on the print edition, the *Root & STEM* podcast introduces listeners to communities, projects, and activities that explore STEAM education in a digital world.



[rootandstem.ca/learn/the-root-stem-podcast](https://rootandstem.ca/learn/the-root-stem-podcast)

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