CYBER CIVICS
Level 3: Media Literacy for Positive Participation

UNIT 3: MISINFORMATION | LESSON 10
RECOMMENDED GRADE: 8 | APPROX. TIME: 50 min.

# AI, DEEPFAKES, AND THE NEWS

It's impossible to overlook the increasing role artificial intelligence (AI) is playing in the spread of news misinformation and disinformation. Today, AI-powered chatbots, image and video generators can produce text and visuals on a scale never seen before, making it easier than ever for false or misleading information to flood the Internet. As of May 2025, NewsGuard has identified 1,271 unreliable AI-generated news and information websites—known as "UAINS"—across 16 languages. These sites often look like legitimate news outlets but are run with little or no human oversight, publishing hundreds of articles generated by bots. On top of this is the surge of "deepfakes"—AI-generated audio or video content that convincingly mimics someone's appearance or voice. And now, there is a flood of entirely AI-generated "people." In this lesson, students will investigate how AI is being used to spread misinformation and disinformation, examine real-world examples, and—most importantly—learn practical skills to identify AI-generated content. Please spend time with this lesson.

KEY STANDARDS

ISTE Standards: Empowered Learner (1.1.c), Digital Citizen (1.2.b), Knowledge Constructor (1.3.a, b, d).
CASEL Competencies: Relationship Skills (4.a, b, d), Responsible Decision-making (5.d, e).
CCSS.ELA.LITERACY: RI.8.1, RI.8.9, SL.8.1, SL.8.2, SL.8.4, L.8.6.
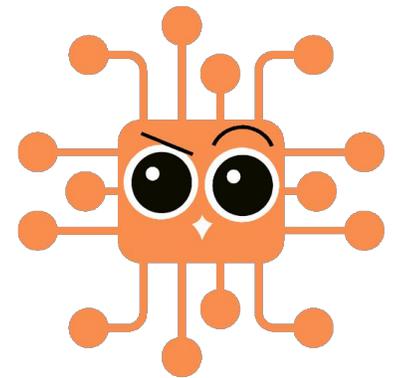
LEARNING OBJECTIVES

Students will….
- ✓ Review what artificial intelligence (AI) is and how it works.
- ✓ Understand the role AI is playing in the dissemination of misinformation and disinformation.
- ✓ Discover what a deepfake is and learn techniques to spot AI in use.

INTRODUCING THE LESSON

Review what students have learned so far in this unit: While the spread of misinformation isn't new, increasingly sophisticated technologies keep making it easier (and faster!) to create and share false information. Today, artificial intelligence (AI) tools are playing a growing role in this process by helping people generate and spread misinformation more quickly than ever. The good news? These same tools—along with our own critical thinking skills—can help us spot and stop misinformation too.

THE LESSON

1. Review: Artificial Intelligence (AI) is a machine or computer program's ability to perform tasks that historically required human intelligence. AI systems "train" on data (on the Internet) by observing and memorizing it, looking for and repeating patterns. Then, when AI systems are fed new information or inputs, they can compare it to what has been "learned" in order to make predictions or, in the case of generative AI, generate new content.

2. As students have discovered in previous lessons, AI is already being used in a myriad of ways. This lesson will focus on how AI is being used to spread news misinformation and disinformation.

3. Explain that AI tools can generate articles, images, and in some cases, entire websites. AI-generated websites, which typically have generic names, can easily mimic the look of established news sites. They run with little to no human oversight and publish articles on a variety of topics written largely or entirely by AI. Some websites churn out vast amounts of clickbait articles to earn ad revenue (remind students of <u>the example</u> of the Macedonian youth). Such websites often do not disclose ownership or authorship and articles may include misinformation and disinformation.

4. Tell students that there are often clues or signs that will alert them that an article may be AI-generated. They should:

- **Check how it's written.** Look for repetitive words or phrases, bland language, sentences that sound odd, and articles that end with, "In Conclusion." Ask yourself if the article reads strangely flat or uses overly complicated language. These are all tell-tale signs of AI-generated content.

- **Check for vague or general information.** AI articles may give a lot of general facts but not many specific details or examples. Another sign that an article could be AI-generated is a lack of real-life examples. AI doesn't have these!

- **Check if the article stays on topic.** Sometimes AI-generated articles veer off-topic or include unrelated information. If the article doesn't answer the main question or address the original subject of the article, it may be AI-generated.

- **Use an AI-detection tool.** There are free online tools (Grammarly or Turnitin) that can check if an article is AI-generated. Just copy and paste the text into the tool and see what it says.

5. If these tips lead a student to believe that an article has been AI-generated, they can use the 3 essential questions to investigate further. Here's a review:

   - **Question 1. Who is Behind This Information?** Investigate the author. Many AI-generated articles will not even have one!

THE LESSON, continued

- ○ **Question 2: What is the Evidence for the Claims?** If quotes, citations, or references are provided, check to see if they are legitimate or if they even exist. AI-generated articles have been known to create completely false and made-up citations and references.

- ○ **Question 3: What Do Other Sources Say?** Open another tab on your browser and conduct some research into what others say about the claims in the article.

6. Tell students that in addition to being able to detect AI-generated written content, it is just as important to be able to detect AI-generated images (also referred to as "synthetic images") and video.

7. Screen [Video 1].

8. Have students record the definition:

   DEEPFAKE:
   An image or video that has been digitally altered to misrepresent a person's likeness, to show them saying or doing something they never said or did.

9. Discuss how new technologies allow for the creation of deepfakes that are increasingly convincing. Screen [Video 2] to make this point.

10. Explain that some deepfakes (like the one they just viewed) might simply be made for entertainment. However, other deepfakes could have dire consequences for democracy and even national security, especially when they involve political figures. Deepfakes might also cause embarrassment or damage to a person's reputation.

11. Completely AI-generated "people" can now be easily created with AI tools too. For example, this "news" clip (in Slides) was created by Google's VEO3 tool in two minutes with one prompt: *"Generate a TV news anchor with a British accent, the anchor says 'in shocking news, J.K. Rowling's yacht sank with her on board after being attacked by orcas off the coast of turkey' include the announcement in the dialogue."*

12. Ask students if they can detect which of the following images is a real person and which one is AI-generated (in Slides).

Prompt used to create the image: "*A young man is sitting on a couch with headphones on, in the style of iconic pop culture references, prairiecore, avocadopunk, photo taken w/kodak portra, garden state, intense gaze, modular, movie still.*"

From: https://www.nytimes.com/2023/04/08/business/media/ai-generated-images.html

THE LESSON, cont.

Answer: The image on the left is a real person, photograph taken by Tara Moore for Getty Images. The image on the right was created by Julie Wieland using Midjourney, a popular AI tool that creates images from text commands.

13. Although deepfakes and synthetic images are getting harder and harder to detect, tell students they can use the following detection tips

- **Quality Discrepancies:** Variations in the overall video or image quality or sharpness compared to the background or other elements in the scene.
- **Background Anomalies:** Unusual or distorted elements in the background, such as strange shadows or objects.
- **Unnatural Artifacts:** Anything strange or unnatural around the face or other parts of the video or image. These may include blurriness, pixelation, or unusual edges.
- **Facial Inconsistencies:** In video, look for unnatural blinking, mismatched eye movements, distorted facial expressions, or unusual head movements.
- **Lip-Syncing Errors:** In video, look for lip movements that do not match the audio.
- **Robotic-Sounding Voice:** In video, listen for lack of inflection or emotion, and unnatural pauses.

ACTIVITY OR HOMEWORK

Distribute the two articles and two images (in Student Packet) to each student. Have them read each article and try to determine which one was AI-generated and which was written by a journalist. Suggest students use the tips they learned (and their devices, if possible). Ask students to also determine which photo is real and which one is AI-generated. **Important:** Even though the first tip is to investigate the author, tell students that because one article had an author (the journalist-written one) and one did not (the AI-generated one), no author name is included in either example. It would have made this assignment too easy! For the same reason, there is no identifying caption on the authentic photo either.

Have students report what they discover and explain how they discovered it! Ask: *How difficult was it to identify which article was AI-generated and which was written by an actual journalist? What about the photos?*

Teacher Key:

Article #1 is AI-generated. If your students struggle figuring this out on their own, suggest they use devices to investigate the authenticity (or even the existence!) of the citations. Article #2 was written by real journalist Victoria Gill, Science correspondent for BBC News. You can find the article here: https://www.bbc.com/news/science-environment-68071695

ACTIVITY OR HOMEWORK, continued

Image #1 is a real photo taken by Shawn Miller, it accompanies the real article (#2). Image #2 is AI-generated on OpenArt using the prompt: *hermit crab wearing discarded plastic as a shell.*

GOAL

Students will understand how AI can be used to spread misinformation and disinformation, and how they can best detect it.

FOR STUDENT, ARTICLE #1

Hermit Crabs Turn to Plastic Waste for Shelters Amid Growing Pollution Crisis

As the global plastic pollution crisis intensifies, hermit crabs are increasingly relying on discarded plastic waste for their homes. This alarming trend highlights the far-reaching impacts of environmental degradation on marine life.

Hermit crabs, known for their unique behavior of using empty shells for protection, have traditionally relied on natural shells left behind by other marine creatures. However, with the decline in available natural shells due to overfishing and habitat destruction, these resilient crustaceans are adapting by turning to plastic debris.

Plastic Shelters: A Desperate Adaptation

Recent studies have documented hermit crabs using a variety of plastic items as makeshift homes. From bottle caps to small containers, these crabs are finding refuge in materials that were never intended for marine use. Researchers from the University of Tokyo observed this phenomenon on beaches across Southeast Asia, where plastic pollution is particularly severe.

"We found hermit crabs inhabiting pieces of plastic debris in over 60% of the surveyed areas," said Dr. Miyako Tanaka, the lead researcher of the study. "This adaptation is a clear indication of the severe shortage of natural shells and the abundance of plastic waste in our oceans."

The Dangers of Plastic Homes

While hermit crabs have demonstrated remarkable adaptability, the use of plastic waste as shelters poses significant risks. Plastic debris can be sharp, causing injuries to the crabs. Additionally, chemicals leaching from plastic can be toxic, potentially harming these creatures over time.

Moreover, plastic shells lack the structural integrity of natural shells, making hermit crabs more vulnerable to predators. A study published in the journal Marine Pollution Bulletin found that hermit crabs using plastic shelters had a 23% higher mortality rate compared to those in natural shells.

Implications for Marine Ecosystems

The shift from natural shells to plastic waste has broader ecological implications. Hermit crabs play a vital role in marine ecosystems by scavenging and recycling organic matter. Their health and survival are crucial for maintaining the balance of these environments.

Dr. Tanaka warns, "If hermit crabs continue to face increased mortality due to plastic pollution, we could see a cascading effect on marine ecosystems. The loss of these important scavengers could disrupt nutrient cycles and lead to further ecological imbalances."

A Call to Action

The plight of hermit crabs using plastic waste as shells is a stark reminder of the urgent need to address plastic pollution. Global plastic production has reached unprecedented levels, with over 8 million tons of plastic entering the oceans annually. To mitigate this crisis, concerted efforts are required at both individual and governmental levels.

Reducing single-use plastics, improving waste management systems, and supporting beach cleanup initiatives are critical steps towards alleviating the plastic burden on marine life. Additionally, raising awareness about the impacts of plastic pollution on marine species can foster greater public engagement and advocacy.

As hermit crabs continue to navigate a world dominated by plastic, their struggle underscores the interconnectedness of all life on Earth. The choices we make today in managing plastic waste will determine the future health of our oceans and the myriad creatures that depend on them.

Citations:
Tanaka, M., et al. "Hermit Crabs and Plastic Debris: A Growing Crisis." University of Tokyo, 2023.
"Impact of Plastic Pollution on Marine Life." Marine Pollution Bulletin, vol. 123, no. 4, 2022, pp. 789-797.
"Global Plastic Waste Crisis: An Overview." Environmental Science & Technology, vol. 54, no. 7, 2023, pp. 3495-3502.

ARTICLE #2

Hermit Crabs are 'Wearing' Our Plastic Rubbish

Hermit crabs all over the world, which scavenge shells as armour for their bodies, are turning increasingly to plastic waste instead.

The conclusion is based on analysis of photos, taken by wildlife enthusiasts, and published online.

Scientists said they were "heartbroken" to see the extent to which the animals were living in our rubbish.

They said two-thirds of hermit crabs species were pictured in "artificial shells" - items that humans discarded.

The discovery is published in the journal Science of the Total Environment.

The study used social media and photo-sharing websites, as one of the researchers Marta Szulkin, an urban ecologist from the University of Warsaw, explained: "We started to notice something completely out of the ordinary.

"Instead of being adorned with a beautiful snail shell, which is what we're used to seeing - they would have a red plastic bottle cap on their back or piece of light bulb."

She and her colleagues, Zuzanna Jagiello from the University of Warsaw and Łukasz Dylewski, from Poznan University of Life Sciences, found a total of 386 individuals using artificial shells - mainly plastic caps.

"According to our calculations, 10 out of the 16 species of land hermit crabs in the world use this type of shelter and it's been observed in all tropical regions of the Earth," Prof Szulkin explained.

It isn't yet clear whether these materials are harmful - or perhaps even helpful - for the small, vulnerable crustaceans.

"When I first saw these pictures, I felt it was heart-breaking," Prof Szulkin told BBC Radio 4's Inside Science. "At the same time, I think we really need to understand the fact that we are living in a different era and animals are making use of what is available to them."

Fighting over plastic

This internet-based ecological study, revealed that this use of artificial shells is a "global phenomenon".

"We saw it in two-thirds of all terrestrial hermit crab species," said Prof Szulkin. "That's what we could identify just by using pictures taken by tourists."

Hermit Crabs are 'Wearing' Our Plastic Rubbish, cont.

The researchers say the findings open up new questions about how these coastal crustaceans interact with and use plastic. As well as understanding whether it causes them any harm, the scientists want to work out how it might affect their evolution.

This whole group of crabs have adapted to scavenge and use discarded snail shells to protect their fragile bodies. And when those shells are in short supply, the crabs will fight over them.

What we don't know is how much the element of novelty might affect them - and whether the crabs will fight over artificial plastic shells," explained Prof Szulkin.

The researcher said that the natural snail shells were in decline, so she suspected it might be becoming easier for the animals to find an artificial alternative. And lighter, plastic 'shells' might even help smaller, weaker crabs to survive because they are easier to carry.

There is certainly a great deal of plastic in the marine environment for the animals to choose from. A recent study that attempted to quantify the scale of plastic pollution estimated that at least 171 trillion pieces of plastic are now floating in our oceans.

That could nearly triple by 2040 if no action is taken, experts have warned.

But there is hope that 2024 could see nations finally sign up to a long-awaited global treaty to end the scourge of plastic.

Mark Miodownik, who is professor of materials and society at University College London told the BBC that there was a lesson for humans in these images. "Just like the hermit crabs," he said, "we should be reusing plastics much more, instead of discarding it."

Which photograph is real, which is AI-generated?

#1

#2

TERMS TO KNOW

ARTIFICIAL INTELLIGENCE (AI)

The ability of a machine or computer program to perform tasks that historically required human intelligence.

MISINFORMATION

False or inaccurate information.

DISINFORMATION

Deliberately false information, misleading by design.

DEEPFAKE

An image or video that has been digitally altered to misrepresent a person's likeness, to show them saying or doing something they never did or said.

SYNTHETIC IMAGE

A computer-generated visual representation created through artificial intelligence and advanced image generation technology.