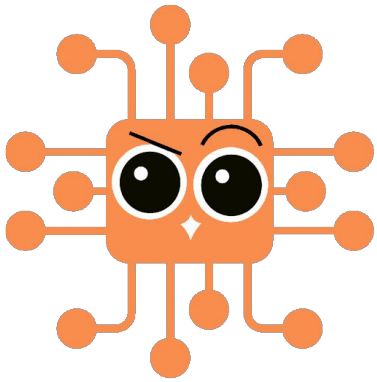
WHAT DOES AI HAVE TO DO WITH NEWS?

It is impossible to overlook the increasing role of artificial intelligence (AI) in the spreading of misinformation and disinformation. AI chatbots and image generators can generate text and visuals at an unprecedented scale. NewsGuard recently identified nearly 1,000 unreliable AI-generated news and information websites, labeled "UAINS," spanning 16 languages. Additionally concerning are "deepfakes"—audio or visual content that uses generative AI to mimic a person's likeness or voice. These can depict public figures doing or saying things they never did or said and can be easily made and shared. In this lesson, students will explore how AI is being used to spread misinformation and disinformation, and most importantly, how to identify it. Please take time with this important 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 in this unit thus far: Although the spreading of misinformation is not a new phenomenon, increasingly sophisticated technologies are making it easier than ever to generate, share (and, fortunately, even detect!). One of these new technologies is artificial intelligence, also known as AI.

Although students learned about AI in the Level 2, assess what they remember. Ask: *What is AI? Can you explain how AI works?*

THE LESSON

1. Be sure your students recall that 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 in the spreading of 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 the example of the Macedonian youth). Such websites often do not disclose ownership or authorship and articles may include misinformation and disinformation.

4. Suggest students use these tips to detect AI-generated content:

- Use the first essential question they learned: investigate the author. Many AI-generated articles will not even have one.
- Use the second essential question: check the evidence. 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.
- Use the third essential question: see what others say about the article. Open another tab and conduct some research.
- Look for repetitive words or phrases, bland language, sentences that sound odd, and articles that end with, "In Conclusion." These are all tell-tale signs of AI generated content.

5. Tell students that AI tools are also being used to generate deceptive videos. Screen [Video 1] to illustrate this point.

6. Have students record this 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.

7. Discuss how deepfakes can be very convincing. Screen [Video 2] to make this point.

THE LESSON, cont.

8. Explain that while some deepfakes, of political figures for example, can have dire consequences for democracy and even national security, others (like the one they just viewed) might simply be entertaining. However, for some people even these might cause embarrassment or damage to their reputation.

9. AI is also being used to create completely fake people and voices. To illustrate, ask students if they can detect which of the following images is a real person and which one is AI-generated (in Slides).

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

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

> *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.*

10. Suggest students use these tips to detect a deepfake or an AI image:

- Facial Inconsistencies: Look for unnatural blinking, mismatched eye movements, distorted facial expressions, or unusual head movements.
- Unnatural Artifacts: Pay attention to anything strange or unnatural around the face or other parts of the video or image. These may include blurriness, pixelation, or unusual edges.
- Lip-Syncing Errors: Deepfakes may have lip movements that do not match the audio.
- Quality Discrepancies: Look for variations in the overall video or image quality or sharpness compared to the background or other elements in the scene.
- Background Anomalies: Keep an eye out for unusual or distorted elements in the background, such as strange shadows or objects.

THE LESSON, cont.

11. Surprise students by telling them these tips were generated by ChatGPT, a generative AI tool that can answer questions, write essays, and more.

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 generated by AI 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 how they discovered it! Ask: *How difficult was it to identify which article was written by AI 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

Image #1 is a real photo taken by Shawn Miller, it accompanies the real article above. 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?

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.