

DIGITAL
PUBLIC
SQUARE

Do Sharks Love Ice Cream?



This lesson is part of *USE, UNDERSTAND & ENGAGE: A Digital Media Literacy Framework for Canadian Schools*: <https://mediasmarts.ca/teacher-resources/use-understand-engage-digital-media-literacy-framework-canadian-schools>.

Overview:


In this lesson, students **learn how science news articles are written** and **how to read them with a critical eye**. They analyze elements such as peer review, correlation, and bias, and then write a science article based on an actual press release.

Learning Outcomes:

Students will:

- Understand how issues are represented in news and popular discourse, and analyze how these representations may or may not be accurate
- Analyze how medium and genre elements direct attention, communicate meaning and provoke inference
- Understand the norms and practices of the news industry
- Create a media work that makes effective use of codes and conventions of the medium and genre
- Ask critical questions about what is and is not included in a media work, whose voices are and are not included or given priority, and the implications of those choices
- Effectively use elements of medium and genre to direct attention, communicate meaning and provoke inference in a media work
- Consider the moral and social implications of creating and distributing a media work

Preparation and Materials:

 Prepare to distribute the parent information sheet *Know It Or Not?* Background for Parents and Guardians

 Prepare to distribute the following handouts:


Do Sharks Love Ice Cream?

Know It Or Not?

Press Releases

 Prepare to project or distribute the following handout:

How a Science Article Gets Written

 Prepare to distribute the assignment sheet *Writing a Science Article*.

Ensure that students have access to internet-capable devices and can access the *Know It Or Not* game www.learn.knowitornot.com.

 Review the following teacher backgrounders:

Know It Or Not (Teacher's Version)

Talking About Controversial Issues in the Classroom

Procedure:

Before delivering the lesson

At least one day before the lesson, send the parent information sheet *Know It Or Not: Background for Parents* home with students.

How a Science Article is Written



Ask students what they would think if they heard that eating ice cream makes you more likely to be attacked by a shark.

Tell students that a lot of what we hear about science or health comes from news stories – either directly from reading or watching them, or indirectly from someone else telling us about them (in person or on social media). Explain that while most science or health stories that come from legitimate news sources are generally reliable, they can make some things seem more or less common or risky than they really are. As a result, you always have to read them with a critical eye.



Distribute the handout *Do Sharks Love Ice Cream?* Have students read it (or read it together with the class) and then have them answer the first two questions.



Now take up the first two questions:

● What does it mean that there is a correlation between shark attacks and ice cream sales?

(A correlation is a relationship between two measurements or sets of numbers. In this example, they both go up and down during the same months.)

● A correlation can be caused by three things: by a coincidence (there is no actual connection between the two things), by one thing causing the other, and by both of them being caused by something else. Based on what you read in the article, which do you think is happening here?

Let students share their opinions, but don't give a definitive answer to the second question right away.



Project or distribute the handout *How a Science Article Is Written* and go through it with the class.



Have students answer questions 1-8, either individually or in pairs, and then take up in class:

- **What do you think prompted the reporter to write this article?**
 - There's no obvious "news hook" (though the story does tie it in to "beach season" coming up) so it was probably prompted either by the researchers (or their university) sending out a press release or by the reporter (or editor) spotting the article in the journal.
- **What about the original study might have made it seem *newsworthy*?**
 - It's surprising (how could there be a connection between sharks and ice cream?); it has striking images (the shark's fin from *Jaws*); it's relatively easy to explain.
- **How does the *headline* get the reader's attention? How might it be misleading? What does it suggest that is not necessarily shown in the article?**
 - It gets the reader's attention by starting with a surprising question and a striking image ("shark attacks").
 - It could be misleading because it states the connection between the two things more strongly than the article does (it says "shark attacks tied to ice cream sales," but the article only says they may be related) and suggests a mechanism that isn't mentioned in the article (that "sharks love ice cream.")
- **Which part of the article is the *lede*? How does the writer get the reader's attention and show why the story is *newsworthy*? How might those choices be misleading?**
 - The lede is the first two sentences.
 - It gets the reader's attention by showing what's new about this story (a new study) and what's surprising (shark attacks may be connected to ice cream sales) and by using a vivid image (the shark from the movie *Jaws*).
- It might be misleading because it doesn't tell you how many shark attacks there are in a year. Without knowing that, we might not realize that there were just 57 shark attacks worldwide in 2020.
- **Which part of the article is the *nut graf*? How does it communicate the "5 Ws" of the story? How might the details here change what you think about the rest of the article?**
 - The nut graf is the next two paragraphs and the graph.
 - **What** is the connection between ice cream sales and shark attacks in a month.
 - **When** is the week before this article was written.
 - **Who** is statisticians at Abel Tasman University,
 - and **Where** is Australia and the Journal of Improbable Correlations, where the story was published.
 - It might change what you think about the rest of the article because the difference in the number of shark attacks is fairly small (from 28 in January to 3 in May – a fairly big relative difference, but a small absolute one.)
 - On the other hand the fact that the authors were statisticians at a university might make you more confident that the research was unbiased. (What would you think if it had been funded by a company that made popsicles or chips, or some other product that people might eat instead of ice cream?)
- **Which part of the article is the *body*? How might the details here change what you think about the rest of the article? What impression does the kicker leave you with about whether the story is important or not?**
 - The body is the last three paragraphs.

- Point out that this paragraph mentions this study has not been *peer-reviewed* or published in a scholarly journal. Ask students what they think “peer review” means, and explain that scientific articles are reviewed by other people working in the same field before being published. Because this hasn’t been done, we don’t know what other scientists think about the finding.
- The study’s authors were not actually researching this question, which means they might be less likely to have considered other explanations for the connection. As well, a scientist who is an expert on sharks said that sharks would not be interested in ice cream.
- The kicker suggests that you should “think twice about buying an ice cream the next time you’re at the beach” even though the article gives no evidence that ice cream and shark attacks are actually related in a meaningful way.
- Is the connection between ice cream sales and shark attacks a *coincidence*? Is it evidence that one causes the other? Or might they both be correlated with something else that caused them both?
 - If students suggest it that it is a coincidence, or that ice cream sales cause shark attacks (or vice versa), ask: Is there something else about those months that might cause both ice cream sales and shark attacks to rise and fall at the same time?
 - Temperature could affect both ice cream sales and shark attacks. This is an example of a correlation that does suggest one thing caused the other: higher temperatures make people buy more ice cream and more likely to swim (which raises the risk of shark attacks.)



When Does a Correlation Mean Something?

Read through question nine with the students, then put them in groups of three and have each group brainstorm a way to investigate **one** of the methods of finding out whether one thing causes another. Give them about five minutes to do this and then take up the question with the class. Make sure students write down the answers for the methods they didn’t work on.

The answers should be something like this:

- **Consistency:** You could graph ice cream sales and shark attacks in different places to see if the same pattern appeared.
- **Sequence:** You could find out if shark attacks rose after ice cream was invented, or was introduced to a place that didn’t have it before.
- **Mechanism:** You could study sharks to find ways that they might be able to tell if someone had eaten ice cream, or if there was ice cream in the water.
- **Direction:** You could try to think of ways that being attacked by sharks might make people ice cream (do people eat more ice cream in the hospital?) or things that might make people eat more ice cream and be more likely to be attacked by sharks.
- **Consensus:** You could study what’s known about sharks to see if there’s a reason to think they would respond to ice cream.
 - *Peer review*, which was introduced when discussing the body of the article above, is another way of comparing a finding to the scientific consensus in a field.
- **Experiment:** You could put ice cream in the water (or have someone eat ice cream and then get in a shark cage) and see if sharks respond to it.

Science News



Now ask: Are there things about how science articles are written that might make it hard to accurately cover science stories?

Make sure the following points come up:

- Headlines often overstate evidence or leave out important information (such as a new study that was done on mice, not people, or that only had a tiny sample size)
- Because of the way news articles are organized, people may not read information that helps them see whether a correlation is meaningful or whether it's describing a relative or absolute change.
- The fact that things have to be recent to be newsworthy means that well-established science, such as the fact that vaccines work to prevent viral diseases, isn't news, and that single events get covered more than gradual processes.
- It also means that the first studies on a topic are more likely to get coverage, while later ones that replicate them (or don't) usually don't get covered. By the time something is accepted science, it's old news!
- The fact that things have to be surprising to be newsworthy means that news is more likely to report on findings that go against the scientific consensus (while in science, a finding that's against the consensus needs more evidence to be considered)
- It also means that things that are rare, like shark attacks or plane crashes, are more likely to be covered, which can make them seem more common than they really are.
- The preference for stories with human interest or striking images can make journalists less likely to cover science stories that might be important but aren't clearly relevant to readers, and more likely to cover stories that are relevant but might not be good science (like a lot of nutrition stories that show correlations between some food and some health condition).
- The fact that many reporters who cover science stories are not specialists means they don't always know what questions to ask about a study or finding.
- The fact that reporters often have to write quickly means they will often write an article based just on a press release they were sent, without asking questions or getting additional quotes. (Imagine if the writer of this article hadn't spoken to the shark expert!)

Know It Or Not? Facts and Myths About COVID-19



Distribute the worksheet *Know It Or Not* and have students complete the Know It Or Not game. Depending on what devices and internet access are available, you may choose to have students complete the game and worksheet individually or in pairs.

If you are delivering this lesson over two days, you may wish to have students complete the game and worksheet at home rather than in class. (The game takes about five to ten minutes to complete.)



Next, take up the *Know It Or Not* worksheet. After reminding students that they do not have to share any answers they do not want to, ask:

- Which of the *claims* (either true or false) had they heard (or read or seen) before?
- Had they heard more true or false claims before? If so, can they remember where? Had anyone seen a news story (either in print, online, in other media such as TV or radio, or shared on social media) that included one?
- Was there anything in the game that surprised them? Why or why not?
- Remind students that only 1 in 10,000 people who get COVID-19 vaccines have serious side effects. Why might those side effects have been seen as newsworthy? (Because they're uncommon, striking and relevant.)
 - How might this have given people a mistaken idea of how worrying they are? (News coverage of individual cases of side effects can make them seem riskier. Stories make a bigger impact on us than statistics!)
- How many people were surprised to learn that more than seven in ten Canadians agree you should have to show you've been vaccinated to take a train or airplane or to eat at a restaurant? (A story where most people agree is a "dog bites man" story that doesn't have much surprise or conflict.) How might news coverage have given them the impression that more people were opposed to vaccination or vaccine mandates? (People who are opposed to vaccination and vaccine mandates do things like protests that are single events, provide striking images, and include content. People who are in favour of vaccine mandates mostly just get vaccinated!)

Press Releases



Tell students that while the article about sharks and ice cream is not real, they are now going to look at some press releases based on real studies. Distribute the handout **Press Releases** and have students return to their groups of three from the *When Does a Correlation Mean Something?*

In each group, have each member choose one of the three press releases and answer the questions at the top of the handout. When they have finished, have the members of each group share and discuss their answers.



When the groups have finished discussing them, take up the questions in class:

What makes each press release more or less newsworthy?

- The pet obesity story might be newsworthy because it is relevant to many people (many of us own pets) and has a "human interest" element.
 - It's not that important a story but it's easy to explain and contains many interesting facts and it won't be hard to find good "art" to illustrate it (pictures of pets always do well).
- The vaccination story is newsworthy because it's important (it affects a lot of people's decision to get vaccinated or not) but the science might be kind of hard to explain.
 - There isn't a lot of immediate "human interest" and there aren't many obvious ways to illustrate the story with a photo or graphic.
- The digital media story is newsworthy because it's surprising (video games can be good for you!) and relevant to parents, who are concerned about their kids' screen time.
 - It will be fairly easy to find a photo or graphic.

How reliable do you think the science is in each press release? Why?

- The pet obesity story has a reasonably large sample (1,021 pet owners and 257 veterinarians). However because they invited people to do the survey, there's the possibility that people who were more interested in the topic were more likely to respond, so the findings may not be accurate.
 - Most importantly, the study was not published in a peer-reviewed journal (or even as a preprint by independent scientists) but was paid for and published by a pet food company.
 - While it may seem odd for a pet food company to suggest people give their pets less food, the argument for "better nutrition" might lead people to buy their food instead of another brand.
 - The vaccination story also has a fairly large sample (738 people).
 - It was not published in a peer-reviewed journal but was published by the U.S Centers for Disease Control, a very authoritative source for medical information.
 - The story describes some of the limitations of the research, which is actually a good sign that the researchers are being open and transparent about their work.
 - The digital media story has a very large sample (11,341 teens) and was published in a peer-reviewed journal.
 - This story also describes some of the limitations of the research.
 - The research team controlled for other factors that might have explained the results.
- Each story describes a correlation. Based on the information given, what (if anything) do you think the correlation probably means?
- The pet obesity story shows that people think their pets are eating more since the pandemic, but doesn't actually show a correlation.
 - While it is possible to imagine a mechanic by which this could happen (people were home more, so they fed their pets more) and it's not possible that the causation could run the other way (overfeeding pets could not have caused the pandemic) it's also just as possible that people were noticing their pets' weight more because they're at home with them.
 - There's already a well-established mechanic to explain the correlation in the vaccination story (vaccines provide protection from viruses) and the scientific consensus supports it (other research has found higher antibody levels among people vaccinated after recovering from COVID-19).
 - There might be a third thing that was affecting both vaccination and reinfection (for instance, people who get vaccinated might also be more likely to wear masks.)
 - It isn't hard to think of a mechanic that could explain why video games might make boys less likely to be depressed and social media might make girls more likely to be depressed.
 - The researchers controlled for third factors, but there's no way to be sure that the correlation doesn't run the other way (less depressed boys play more video games, more depressed girls use social media more).

Assessment Task: Writing a Science News Article



Distribute the assignment sheet **Writing a Science News Article** and go through it with the class. You can use the rubric to assess both the article and their contributions during class.

Know It Or Not?

Background for Parents and Guardians

Dear Parent / Guardian

Your child's class will soon be participating in one or more of the lessons in *Know It Or Not?*, a program developed by MediaSmarts, Canada's Centre for Digital and Media Literacy, and Digital Public Square, a not-for-profit founded to promote human rights, inclusive frameworks for decision-making, and healthy deliberation.

Know It Or Not? has been created to help students in Grades 7 to 12 become more resilient to misinformation and common misconceptions related to public health. Our goal is that by providing effective and tailored refutations of COVID-19 vaccine misinformation, we can begin to build media literacy skills including reflection, discovery, and investigation, that help build resilience to future misinformation.

The Program

The *Know it or Not?* program is designed for the classroom and to be delivered by your child's classroom teacher. It includes both teacher **training materials** and **lesson plans**. The lessons your child may be participating in include:

Do Sharks Love Ice Cream?: This lesson will teach students how to science is represented in news media. Students will learn how science news articles are written and how to critically analyze them, and then use these skills to write a news article about a scientific discovery.

Consensus or Conspiracy?: This lesson teaches students what scientific consensus is, how it can change as part of the scientific process, and how to identify the scientific consensus on a topic and to compare new claims or discoveries to the consensus. Students also learn how fringe beliefs can contribute to belief in conspiracy theories and then explore how to recognize the hallmarks of a conspiracy theory.

Why We Created the Program

In 2020, Digital Public Square developed and evaluated two digital game interventions to correct misinformation related to COVID-19 in Canada and the US. These tools include *It's Contagious*, which is focused on COVID-19 misinformation, and *Know It Or Not?*, which is designed to counter misinformation and misconceptions about COVID-19 vaccines.

Almost 200,000 participants played these gamified platforms, and two randomized control trials assessed the effects of each digital game intervention. We found that the games helped participants learn and remember important information about COVID-19 and vaccination. These findings held true for a range of key demographics, including young participants aged 15–24 and those who self-identified as Métis, Inuit, or First Nations.

The *Know It Or Not?* program was created to help students find and recognize good information about health and science, understand the risks of misinformation and disinformation, and providing them with the tools they need to make good choices about personal and public health. Both of the lessons have been designed to meet learning expectations found in the official curriculum of your province or territory.

We hope that you will talk with your child about the activities they will be doing during these lessons. If you would like to try playing the *Know It Or Not?* game, either by yourself or with your child, you can access it at www.learn.knowitornot.com. Within the game you will be able to access the [Privacy Policy](#) and [Terms of Use](#). Together, we can help them develop the positive skills and attitudes they need to become resilient to misinformation.

To learn more about MediaSmarts and Digital Public Square, visit their websites at www.mediasmarts.ca and www.digitalpublicsquare.org.

If you have any questions about this program, please contact MediaSmarts by email at info@mediasmarts.ca or by phone at 1-800-896-3342 (toll-free in Canada).

Resources for Parents

If you have concerns or would like more information about finding and recognizing reliable information on science and public health, here are some good sources:

Check First, Share After (<https://checkthenshare.ca/>) provides information on how to find good sources and stop the spread of misinformation.

It includes a custom search engine (which you can access directly at <http://bit.ly/publichealthsearch>) that searches more than a dozen public health authorities in Canada and around the world.

Break the Fake (<https://mediasmarts.ca/break-fake>) teaches four simple ways to find out if something you see online is true or not. It includes quizzes, short videos, tipsheets, a workshop and a self-directed tutorial featuring the North American House Hippo.

How to Tell Fact from Fake Online: A Reality Check guide (<https://mediasmarts.ca/teacher-resources/how-tell-fact-fake-online-reality-check-guide>) offers fact-checking tips that will take you a minute or less to do.

How to Search the Internet Effectively (<https://mediasmarts.ca/tipsheet/how-search-internet-effectively>) explores search skills so that you don't end up overwhelmed with too many search results, underwhelmed with too few, or simply unable to locate the material that you need.

Navigate Online Information, one of MediaSmarts' DigitalSmarts workshops, teaches search skills, how to choose different online sources of information for different needs, and how to verify information you see online. For more information on the DigitalSmarts program you can visit <https://mediasmarts.ca/digital-media-literacy/e-tutorials/digitalsmarts> or call 1-800-896-3342 (toll-free in Canada).

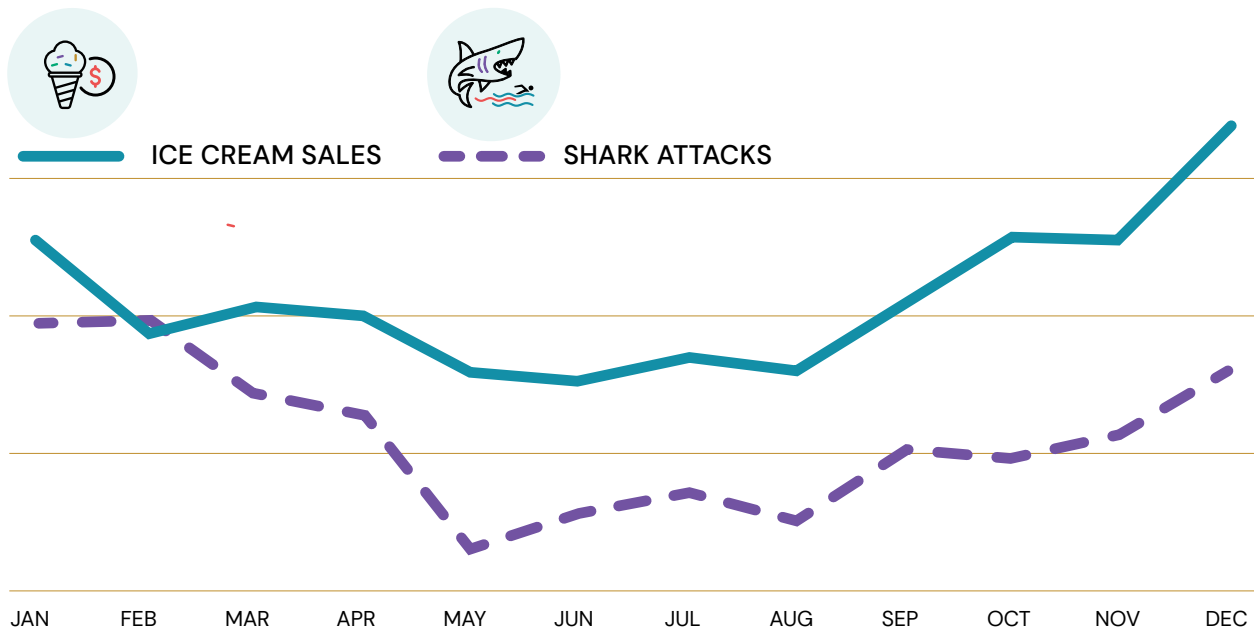
Do Sharks Love Ice Cream?

Shark Attacks Tied to Ice Cream Sales June 4, 2021



Since the movie *Jaws* premiered in 1975, swimmers have watched out for the sight of a shark's fin breaking the water. Now new research has found shark attacks may be tied to a surprising thing: ice cream. Data scientists have discovered that the more ice cream is sold, the more shark attacks are reported.

Just in time for beach season, **Australian statisticians have compared monthly ice cream sales to shark attacks and found that the two are strongly correlated:**



The connection was discovered by statisticians at Abel Tasman University in Sydney, Australia. Twenty-eight shark attacks were reported in January between 1990 and 2009, compared to an average of \$148,000 worth of ice cream sold. Only three shark attacks were reported in May, which had an average of \$26,000 in ice cream sales. In December of those years there was an average of \$200,000 worth of ice cream sold and 23 shark attacks reported. (December, January and February are summer in Australia, while winter is in June, July and August.)

The study, which has not yet been peer-reviewed, was published as a preprint last Thursday. While working separately on two graphing assignments, the study's authors were startled to find they had each drawn nearly the same graph. Darwin Hendrikson, professor of remedial statistics and lead author of the study, said "while the correlation between the two is very strong, we'll need more research to say if they're connected."

However Deirdre Carcharo, a marine biologist at the New South Wales Shark Resource Centre, told us that "while sharks have an incredibly good sense of smell, they wouldn't have any interest in ice cream."

Still, it's enough to make you think twice about buying an ice cream the next time you're at the beach. Is having a snack worth the risk of becoming a snack for a shark?

Do Sharks Love Ice Cream? |
Shark Attacks Tied to Ice Cream Sales

Questions

1. What does it mean that there is a correlation between shark attacks and ice cream sales?
2. What do you think prompted the reporter to write this article?
3. What about the original study might have made it seem newsworthy? Could some of the things that make a story newsworthy conflict with one another?
4. How does the headline get the reader's attention? How might it be misleading?
5. Which part of the article is the lede? How does the writer get the reader's attention and show why the story is newsworthy? How might those choices be misleading?
6. Which part of the article is the nut graf? How does it communicate the "5 Ws" of the story? How might the details here change what you think about the rest of the article? (Look closely at the specific numbers given here.)
7. Which part of the article is the body? How might the details here change what you think about the rest of the article? What impression does the kicker leave you with about whether the story is important or not?
8. Do you think the connection between ice cream sales and shark attacks is a coincidence? Or is it evidence that one causes the other? Or could they both be correlated with something else that caused them both?
9. When scientists find a correlation between two things, there are methods they can use to find out whether one causes or contributes to the other. For each of these, think of what you might investigate to find out whether eating ice cream causes shark attacks. (*The first one was done for you as an example.*)

Control: When scientists look for correlations, they try to control for other possible causes. Are you fairly sure there aren't other things that might have caused the effect or the correlation? To find out in this case, you could see if either ice cream sales or shark attacks correlated with something else, like temperature.

Consistency: Does the correlation appear every time the data is measured? To find out in this case, you could...

Sequence: Did one thing come before the other? To find out in this case, you could...

Mechanism: Can you think of a way that one thing could cause the other? To find out in this case, you could...

Direction: Can you think of a mechanism that could work the other way around? Could a third thing be causing them both? To find out in this case, you could...

Consensus: Does the idea that one of these things causes the other make sense based on what is already known about these things? To find out in this case, you could...

Experiment: Can you imagine an experiment that would test whether one thing causes the other? To find out in this case, you could...

How a Science Article Is Written

Graphic

Most science articles start in one of three ways:

- 1 A university, corporation or government sends a **press release** to news outlets that might cover the story
- 2 A **specialist science reporter** spots a journal article that might make a good story
- 3 An event like a **disaster**, or **disease outbreak** or an **international conference** provides a “news hook” for a story

Next, **reporters** and their **editors** (or **producers** in TV News) decide whether or not to cover the story. Here are some things they think about...

- Is this story **newsworthy**?
- Is it **recent**?
- Is it **surprising**?
- Is it **important**?
- Does it have **conflict** or “**human interest**”?
- Does it have **striking images**?

- How hard will it be to get a **photo or graphic** to illustrate it?
- How hard is the story to **explain**?
- Do I **understand the science** well enough to write this?
- Will our **audience be interested** in this?
- I have **three more articles** to write today...



If they decide to do the story, the reporter starts to write it. Here are the different parts of the story and what's in them:

The **lede** is usually the first 1–2 sentences. It has to **grab the reader's attention** and show what the story is about and **why the story is newsworthy**. In a science story that usually means what's **new or surprising** about it or **why it might be important** to the audience. It could be something a reader would **want to tell a friend**.

Next, the **nut graf** (usually one to two paragraphs) explains the **who, what, why, when, where** and **how** of the story. News articles are written so that you'll know **all the most important information** even if you stop reading here.

The **body** of the story is for readers who **want to know more**. This might include **why a study was done**. The reporter will often **interview scientists** to get **quotes from people** involved in the story and find out **what other scientists think**. It will often end with a **kicker** that says why this is important or what you can do about it.

Next, the **editor** (or **producer** on TV) will review the story and the reporter may rewrite it based on their edits.

Finally, a **copy editor** will write a **headline** for the story. A headline's job is to **get your attention** so it sums up the **most interesting parts** of the story in as few words as possible.

Know It Or Not?



How much do you know about COVID-19 vaccines?

Play the *Know It Or Not* game at www.learn.knowitornot.com to find out. Once you've played it through, answer these questions. You will not be asked to share any of your answers if you don't want to.

1. How many of the things in the game (either **TRUE** or **FALSE** ones) had you ever heard of before? Which were they?

2. Have you heard any of the **FALSE** things from people you know (either in person or online)? If so, which ones?

3. If you have heard any of the **TRUE** things before, where did you hear (or read or see) them?

4. Was there anything in the game that surprised you? What was it? Why did it surprise you?

5. Did you click on the **View Sources** button for any of the questions? If so, what did you learn?

6. If you wanted to find out more about any of the things in this game, how would you do it?

Press Releases



Imagine that you are a reporter who needs to write one more story today.

You received these three press releases about new scientific findings.

- What makes each press release more or less newsworthy? Why?
- How reliable do you think the science is in each one? Why?
 - (Remember the different things that might tell us a correlation means that one thing caused another.)

Fat Pets

- Hill's Pet Nutrition, a pet food company, conducted a survey of veterinarians and pet owners about the impact of the COVID-19 pandemic on pets' weight.
- They sent 1,021 pet owners and 257 veterinarians an email inviting them to fill out the survey.
- The study found that one-third of pet owners surveyed say their pet became overweight during the COVID-19 pandemic. 71% of veterinarians surveyed say it has affected how pets eat.
- Dr. Marina Debernardi, Global Chief Professional Veterinary at Hill's Pet Nutrition, said "We hope these new insights will help pet parents think differently about how they can express their love to their pets and spark conversations with their veterinarians. A simple step is to start with better nutrition and becoming more aware of your feeding habits and the impact it can have your pet's life."
- Half of pet owners think it is easy to help dogs or cats lose weight. 91% of veterinarians say it's harder than their owners think.
- 31% of pet owners would stop checking social media for a month to help their pets lose weight. Half of pet owners would go on a diet themselves to help their pets lose weight.

COVID-19 Vaccination

- Scientists at the United States Centers for Disease Control and Prevention (CDC) studied 738 people in Kentucky to see whether vaccines added protection for people who had already had COVID-19. The study was published in the CDC's weekly *Morbidity and Mortality Weekly Report*.
- The scientists watched people who had been infected with COVID-19 in 2020, before vaccines were available, to see how likely they were to be infected again. They found that people who were not vaccinated after recovering from COVID-19 were 2.34 times more likely to be reinfected than people who were vaccinated.
- People might be at greater risk of being reinfected after recovering from COVID-19 because of new strains of the virus that have evolved.
- Because vaccination also makes COVID-19 symptoms less serious even if they are infected, it's possible that some people who were infected after being vaccinated weren't counted because their symptoms weren't serious enough to report.
- "If you have had COVID-19 before, please still get vaccinated. Getting the vaccine is the best way to protect yourself and others around you, especially as the more contagious Delta variant spreads around the country," CDC Director Dr. Rochelle Walensky said.
- Other research has found that people who had been vaccinated after recovering from COVID-19 had more antibodies that could fight infection than those who hadn't.

Digital Media and Depression

- A research team from University College London, Karolinska Institutet (Sweden) and the Baker Heart and Diabetes Institute (Australia) reviewed data from 11,341 teens for a study published in the peer-reviewed journal *Psychological Medicine*.
- Senior author Dr. Mats Hallgren said “Our research points to possible benefits of screen time; however, we should still encourage young people to be physically active and to break up extended periods of sitting with light physical activity.”
- Researchers found that boys who played video games most days had 24% fewer depressive symptoms, three years later, than boys who played video games less than once a month.
- They also found that girls who used social media most days at age 11 had 13% more depressive symptoms three years later than those who used social media less than once a month.
- The research team controlled for other factors that might have explained the results.
- Lead author, PhD student Aaron Kandola said: “While we cannot confirm whether playing video games actually improves mental health, it didn’t appear harmful in our study and may have some benefits. Particularly during the pandemic, video games have been an important social platform for young people.”

Writing a Science News Article



For this assignment, you will choose **one** of the press releases you have studied and **write a news article** based on it.

Your news article should have a **headline**, a **lede**, a **nut graf** and a **body** paragraph.

You don't have to include every detail from the press release! Only include the things from the press release that you think are important, and organize them in your story from the most to the least important.

Remember that many more people will read your article than will see the original study or press release, so you need to be as **careful and accurate as possible** in describing the research and the correlation it describes, while still **showing why the research is newsworthy**.

When you have completed the article, **write another paragraph** that explains:

- Why you chose this story to write
- How you balanced the newsworthiness of the story with the accuracy of the science
- How you used news article elements such as human interest, striking images, or interesting or surprising facts to make the article interesting.
- Who you would interview for this story (this does not have to be a specific person – for instance, for the ice cream story you could interview “an expert on sharks”) and what you would ask them?

Rubric

	LEARNING EXPECTATIONS	ACHIEVEMENT
Use	<p>Making and Remixing:</p> <ul style="list-style-type: none"> ● Create a media work that makes effective use of codes and conventions of the medium and genre ● Effectively use elements of medium and genre to direct attention, communicate meaning and provoke inference in a media work 	<p>Insufficient (R) Beginning (1) Developing (2) Competent (3) Confident (4)</p>
Understand	<p>Reading Media:</p> <ul style="list-style-type: none"> ● Analyze how medium and genre elements direct attention, communicate meaning and provoke inference <p>Media Representation:</p> <ul style="list-style-type: none"> ● Understand how issues are represented in news and popular discourse, and analyze how these representations may or may not be accurate <p>Finding and Verifying:</p> <ul style="list-style-type: none"> ● Identify bias and agenda of various forms (including political bias, bias towards newsworthiness, and unconscious bias towards status quo) and their influence on what and how news is communicated <p>Consumer Awareness:</p> <ul style="list-style-type: none"> ● Understand that most media products are made for commercial reasons and under commercial pressures ● Understand the norms and practices of key media industries such as news, film, advertising, search engines and social networks 	<p>Insufficient (R) Beginning (1) Developing (2) Competent (3) Confident (4)</p>
Engage	<p>Consumer Awareness:</p> <ul style="list-style-type: none"> ● Create a media work that communicates an understanding and analysis of the commercial considerations of a work or genre ● Consider critical questions about how commercial considerations influenced the creation of a media work <p>Media Representation:</p> <ul style="list-style-type: none"> ● Ask critical questions about what is and is not included in a media work, whose voices are and are not included or given priority, and the implications of those choices <p>Ethics and Empathy:</p> <ul style="list-style-type: none"> ● Consider the moral and social implications of creating and distributing a media work ● Take responsibility for sharing and publishing accurate and reliable information <p>Making and Remixing:</p> <ul style="list-style-type: none"> ● Remix a media work 	<p>Insufficient (R) Beginning (1) Developing (2) Competent (3) Confident (4)</p>

Know It Or Not?

Below are the questions and answers from the *Know It Or Not?* game, along with the sources for each answer. The questions are randomized so students will all see them in a different order.

Please note: The information and sources in the game may be updated as further evidence emerges.

COVID-19 vaccines have strong support across Canadian society.

TRUE: A large number of groups, including the Black Health Alliance, First Nations Health Authority, Canadian Red Cross, Canadian Paediatric Society, and AboutKidsHealth support the use of vaccines to bring an end to the pandemic.

Sources:

Black Health Alliance: <https://blackhealthalliance.ca/covid-19/#Benefits>

First Nations Health Authority: <https://www.fnha.ca/what-we-do/communicable-disease-control/coronavirus/covid-19-vaccine>

Canadian Red Cross: <https://www.redcross.ca/how-we-help/current-emergency-responses/covid-19---novel-coronavirus/vaccination-for-covid-19---frequently-asked-questions>

Canadian Paediatric Society: <https://cps.ca/tools-outils/covid-19-information-and-resources-for-paediatricians>

AboutKidsHealth: <https://www.aboutkidshealth.ca/covid-19>

It's safer for most healthy people to wait and see how COVID-19 vaccines perform than it is to get it right away.

FALSE: Over ten billion doses have already been administered worldwide. People who get vaccinated don't just protect themselves, they also help to protect people who can't be vaccinated or don't get full protection from vaccines.

Sources:

Health Canada: <https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19/vaccines/effectiveness-benefits-vaccination.html>

Vaccinate Your Family: <https://vaccinateyourfamily.org/why-vaccinate/vaccine-benefits/community-immunity>

Bloomberg: <https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/>

WHO: <https://covid19.who.int/>

All the Health Canada approved COVID-19 vaccines have been tested in full clinical trials.

TRUE: All Health Canada approved COVID-19 vaccines went through each step of clinical trials and were tested for safety and efficacy with over 100,000 people. Since then, long-term continuous monitoring has confirmed their safety and effectiveness.

Sources:

Reuters: <https://www.reuters.com/article/factcheck-covid-vaccines/fact-check-covid-19-vaccines-are-not-experimental-and-they-have-not-skipped-trial-stages-idUSL1N2M70MW>

Health Canada (video): <https://health.canada.ca/en/public-health/services/video/how-covid-19-vaccines-safe.html>

WHO: <https://covid19.who.int/>

Even a mild COVID-19 case can cause real problems that last for months or longer.

TRUE: Even among young people with mild cases, COVID-19 can damage the heart, lungs, and kidneys. It can make you lose your sense of smell, and act like a concussion or traumatic brain injury, giving you mental foggy, anxiety, and depression.

Sources:

Long Covid Canada: <https://longcovidcanada.ca/>

The Lancet: [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(21\)00299-6/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(21)00299-6/fulltext)

Johns Hopkins: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/covid-long-haulers-long-term-effects-of-covid19>

Bill Gates and his foundation planned the COVID-19 pandemic so that he could inject people with microchips.

FALSE: The rumour that Bill Gates created COVID-19 is a hoax. A diagram of a microchip that was shared as evidence turned out to be a circuit for an electric guitar pedal.

Sources:

Popular Mechanics: "Conspiracists Say This 5G Chip Is in the COVID Vaccine. It's Just a Guitar Pedal." <https://www.popularmechanics.com/technology/a35122832/5g-conspiracy-chip-covid-19-vaccine-guitar-pedal/>

Serious side effects are common for COVID-19 vaccines.

FALSE: Only 1 in every 10,000 people vaccinated report a serious side effect. Many people do have a headache or fever for a short time after getting vaccinated. This is a sign that the immune system is working to build your protection.

Sources:

Health Canada: <https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19/vaccines/safety-side-effects.html>

Government of Canada: <https://health-infobase.canada.ca/covid-19/vaccine-safety/summary.html>

World Health Organization: <https://www.who.int/news-room/feature-stories/detail/side-effects-of-covid-19-vaccines>

It's still not easy to get a COVID-19 vaccine.

FALSE: Pharmacies and drop-in clinics are offering walk-in vaccine appointments all across Canada. Find a vaccine centre near you by selecting the "View Sources" option.

Sources:

Provincial Booking: <https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19/vaccines/how-vaccinated.html#a1>

Who is eligible: <https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19/vaccines/how-vaccinated.html#a2>

Most Canadians have gotten vaccinated against COVID-19. This means that only a small portion of Canadians are declining the vaccine offer.

TRUE: Eight in ten eligible Canadians have gotten fully vaccinated for COVID-19. This means that only a small portion of Canadians are declining the vaccine offer.

Sources:

Health Canada: <https://health-infobase.canada.ca/covid-19/vaccination-coverage/>

mRNA vaccines have been studied for decades.

TRUE: mRNA vaccines have been studied for decades. They have been found to be safe and effective in people with HIV, rabies, and flu. mRNA does not enter the nucleus where DNA is kept so your genes are not changed in any way.

Sources:

Health Canada: <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/vaccines/type-mrna.html>

CHOP: <https://www.chop.edu/news/long-term-side-effects-covid-19-vaccine#skip-to-content~:text=mRNA%20vaccine,-Although>

Getting natural protection to COVID-19 through infection is less risky than vaccination.

FALSE: While there is evidence to show that getting infected with COVID-19 provides natural protection for a period of time, getting vaccinated minimizes the health risks that come with the virus itself. If you have previously had COVID-19 you have some protection, but this protection is much stronger if you are also vaccinated.

Sources:

SickKids: <https://www.aboutkidshealth.ca/article?contentid=3937&language=english>

Nature: <https://www.nature.com/articles/d41586-022-00177-5>

Hospitals have had to postpone non-urgent medical operations at times during the pandemic.

TRUE: Surges of hospitalizations from COVID-19 infections can overwhelm hospital resources, resulting in the postponement of non-emergency surgeries. While delaying surgeries allows for beds to remain available for patients with COVID-19, it can mean prolonged pain and illness for those who have been told they must wait for their operation or treatment.

Sources:

Canadian Institute for Health Information: <https://www.cihi.ca/en/covid-19-resources/impact-of-covid-19-on-canadas-health-care-systems/hospital-services>

CTV: <https://www.ctvnews.ca/health/coronavirus/with-more-than-500-000-fewer-surgeries-due-to-covid-19-delayed-surgeries-cost-some-their-lives-1.5700480>

Young children's immune systems can be easily overwhelmed by a COVID-19 vaccine.

FALSE: In clinical trials testing vaccine safety and efficacy, 5- to 11-year-olds receive a third of an adult's dose, or 10 micrograms. This is because children are not only smaller than adults, but their immune systems are a little stronger, and can get the same level of immunity from a smaller dose.

Sources:

CBC: <https://www.cbc.ca/radio/whitecoat/dose-covid19-vaccines-children-1.6211257#:~:text=In%20the%20clinical,level%20of%20immunity,%22>

Kaiser Health News (KHN): <https://khn.org/news/article/scientists-examine-kids-unique-immune-systems-as-more-fall-victim-to-covid/>

Getting a COVID-19 vaccine can lead to infertility.

FALSE: There is no evidence to suggest a link between COVID-19 vaccination status and fertility. COVID-19 vaccines stimulate an immune response against proteins that are specific to the virus. Several studies have concluded no unexpected outcomes associated with the vaccine during pregnancy or in infants.

Sources:

Women's Health Research - University of BC: <https://womenshealthresearch.ubc.ca/blog/covid-19-vaccines-and-infertility-fact-or-fiction>

ScienceUpFirst: <https://www.scienceupfirst.com/project/lets-talk-covid-19-and-fertility/>

It is safe to get a COVID-19 vaccination while pregnant.

TRUE: COVID-19 vaccines are both safe and recommended for those who are pregnant. Pregnancy can increase the risk of severe cases of respiratory illnesses, including COVID-19. Research shows that vaccines give significant protection against the virus for pregnant women, especially in preventing hospitalization.

Sources:

Johns Hopkins: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/the-covid19-vaccine-and-pregnancy-what-you-need-to-know>

ScienceUpFirst: <https://www.scienceupfirst.com/project/lets-talk-covid-19-and-fertility/>

The Omicron variant is not concerning for public health.

FALSE: While Omicron is often described as being 'mild', this can be misleading. There is good news from emerging evidence that Omicron may cause less lung damage. However, it is more transmissible than other variants and therefore, the total number of people hospitalized and in ICUs is rising.

Sources:

Preprints with The Lancet: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3996320

Health Canada Epidemiology update: <https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html>

CBC: <https://www.cbc.ca/news/canada/coronavirus-covid19-canada-world-jan9-2022-1.6308866>

ScienceUpFirst: <https://www.scienceupfirst.com/project/omicron-what-we-know-now/>

AboutKidsHealth: <https://www.aboutkidshealth.ca/Article?contentid=4000&language=English&hub=COVID-19>

Talking about controversial issues in the classroom

While every effort has been made to make these lessons a safe and emotionally secure experience, talking about hate and prejudice can nevertheless be a sensitive experience – for both students and teachers.

Teachers are often reluctant to address these issues for a variety of reasons: because they are worried about being seen as preaching to students, because they see the topic as overly controversial or polarizing, or because they are concerned about what students might say in classroom discussions.

School is the ideal place to start because if we don't support young people and talk to them and give them spaces to talk about these events, they're going to seek answers where we don't want them to. They'll be caught up in all kinds of fears, anxieties and false ideas.

Ghayda Hassan, researcher and practitioner, Université du Québec à Montréal

The following section provides teachers and other school staff with guidelines about creating a respectful classroom, fostering and managing complicated conversations, and how to manage problematic student responses over the course of these lessons.

Fostering classroom discussion

MediaSmarts' research has found that adults have a key role to play in helping young people discuss difficult issues. They often turn to trusted adults when they need help or advice in finding reliable information, and look to adults as a model of healthy debate and ethical digital citizenship – while also being aware that adults often do not set a good example in those areas.

Here are some guidelines for fostering a safe and positive classroom discussion.

Don't rush it

It's important to make sure that you have enough time to properly explore the issues that come up in these lessons. Make sure that you're familiar with the lesson plans so that you can keep discussions on track. As well, research shows that interventions to reduce prejudice and discrimination work best when they are spread out over time rather than done in a single session.

Encourage open discussion

Remember that difficult discussions are needed for deep learning. Be prepared for students to say things you weren't expecting or share things you didn't know about, and remember that you don't necessarily know what experiences or aspects of their identities they're bringing to the discussion.

Consensus or Conspiracy?

Talking about controversial issues in the classroom

Draw the line between classroom discussion and political discourse. Just like you don't want to be seen as pressuring students to share your opinions, students shouldn't just be repeating political arguments they've heard at home or seen in social media either. Make sure that they're listening to other students and are open to other people's perspectives.

Encourage students to ask questions as well as offering opinions. Remind them that the point of discussion is not to convince other people but to learn from them. Focusing on questions can lead us to examine assumptions we didn't even know we had.

Make sure students know that you struggle with these questions as well. Be honest about what you do and don't know and position yourself as a co-learner.

While you do want to give up some of your authority as an expert, you still have a responsibility to make sure the discussion stays on track and that everyone is treated with respect.

Set clear and consistent rules

Key to having an open conversation is to have the class agree on ground rules before you start. Knowing that everyone has agreed on what is "off limits" will make students feel freer to speak because they won't worry about crossing a line without meaning to.

Getting the class involved in developing rules for discussion is a good way to signal how important it is that each person in the class takes their responsibility seriously to create and maintain an open and respectful classroom.

Here are some suggested rules to set for your discussion:

- Treat others with respect. Slurs, stereotypes and personal attacks should all be off-limits.
"It's OK if participants challenge each other's ideas, but it's no OK to insult one another's identities." *Let's Talk! Facilitating Critical Conversations with Students*
- No interrupting when someone is talking. If a student says something that violates the previous rules, "pause" them to point that out and then ask them if they can make their point in a way that will contribute positively to the conversation.
- Avoid generalizations by using "I" statements. Encourage students to talk in terms of their own experiences: "I think that...", "When I go into a store...", "When I post a picture...", etc. Make sure students respect the truth of each others' experiences.
- Everyone who wants to speak will get a chance to, but not everyone has to speak. Neither you nor other students should put anyone "on the spot" because of some aspect of their identity.

Identify which issues you consider "settled" before the discussion

While you want to encourage an open conversation, spending class time on topics that are not open to debate, or that marginalize or dehumanize people, has the potential to close down the discussion and leave students hurt or more entrenched in their positions. Groups and movements that spread disinformation often try to conceal their positions as "debating" or "just asking questions" about issues such as whether vaccines are safe or effective or whether the Holocaust happened, and students who have been influenced by these may bring these arguments into the classroom.

Consensus or Conspiracy?

Talking about controversial issues in the classroom

Rather than pretending to be apolitical or trying to “teach both sides,” what is most effective is to approach each topic with open-mindedness and even-handedness, but not neutrality. A key to this – and to avoiding the impression that you’re telling your students what to think – is to distinguish between fact and opinion questions and between active and settled questions.

- **Fact** questions are those that can be conclusively answered, proven or disproven: What nutrients does a bag of potato chips contain? Do vaccines prevent viral illnesses, including COVID-19?
- **Opinion** questions are ones that cannot be conclusively answered but can be supported by argument or evidence: Should food companies be allowed to advertise potato chips to children? Should vaccination be required to hold certain jobs or participate in certain activities?
- **Settled** questions are those that either have been conclusively proven or are accepted by society as settled. A settled fact question would be “Why are objects drawn towards the Earth?” A settled opinion question would be “Should all people receive equal rights under the law?”
- **Active** questions are those that are still being discussed. An active fact question would be “Does gravity act through particles in the way other forces do?” An active opinion question would be “How should we resolve the conflicts between the rights of different groups and people?”

Complicated conversations focus on active opinion questions, and they work best when you are clear beforehand that class time won’t be used to discuss questions that have already been settled.

“When I have talked to other schools [they say], “You let them talk about what?! You let them write a bill about what?! You let them express what opinion?!” Well, if you don’t do it in a safe, structured environment here, they are still doing it at the lunch table. They are still doing it. And if people are still talking about it . . . this at least gives them an appropriate context and a structure with which to sort of deal with some of those charged issues and maybe get an understanding of both sides of the issue.”
‘Ms. Heller,’ high school teacher quoted in *Classroom Deliberation in an Era of Political Polarization*.

For fact questions, teach students to identify the present consensus – not necessarily “the truth,” but what most authorities on the topic think is true, given the current evidence – while helping them understand the process by which consensus is developed in different disciplines.

As well as being open about one’s own views, it is important to model a critical attitude by encouraging students to always ask:

- What do I already think or believe about this?
- Why do I want to believe or disprove this?
- What would make me change my mind?

“To investigate properly, you have to allow yourself to be wrong.” *Digital investigator Jordan Willdon*

Consensus or Conspiracy?

Talking about controversial issues in the classroom

Dealing with issues that arise

As noted above, during complicated conversations students will often say surprising and unexpected things. If you've established clear rules for discussion this usually will not be a problem, but there will be times when you have to pause the conversation and deal with something a student has said.

Press pause. Don't let a problematic word or statement derail the conversation. Tell the student who said it to pause, address it as quickly as possible, and then either use it as a springboard to more discussion or return to the previous conversation. This helps you model for students the idea that it's important to always address prejudiced speech or actions, but we don't have to let people use them to hijack a discussion.

Challenge misleading sources. Many students encounter misinformation and disinformation online, either from social media, from video sites such as YouTube, or from "cloaked" sites that masquerade as legitimate sources of information and debate.

Redirect to an active question and keep it on topic. A lot of the time, when students say something that sounds like it's addressing a settled question they're actually trying to articulate an active question. For instance, a student who says "The government is making the pandemic seem worse than it is" may actually be saying "I am uncomfortable with how individual freedoms are being weighed against collective safety." You can affirm the settled question while redirecting them to something more useful by saying something like "COVID-19 is definitely a serious health issue for all Canadians, but not everyone agrees about the best ways to address it. What might help us decide that?"

Chris Carman, a high school science teacher, responds to students who say climate change is a hoax by saying "I wish it weren't real, but here's the information we have."

If it's clear that a student is trying to debate a settled question, or is arguing in bad faith, simply tell them that the issue is not open for discussion and move on.

If you would like to take a deeper dive into this material, you can use these MediaSmarts resources:

Authentication Beyond the Classroom

In this lesson, students discuss “viral” photos, videos and news stories that spread via social media. They are shown how challenging it is to authenticate these using only their content and are introduced to tools and techniques for gauging their accuracy based on context.

Bias in News Sources

Students are introduced to the key media literacy concept that media contain ideological messages and have social and political implications in considering why it is particularly important to consider possible bias in news reporting. The key concept that each medium has a distinct aesthetic form is introduced as students learn about the “inverted pyramid” structure of news reporting and consider how this may lead to bias. Students then evaluate a variety of news sources with regards to the degree of bias and then demonstrate their understanding of the concept by creating an intentionally biased news report.

Break the Fake: Verifying Information Online

In this lesson, students participate in a workshop that teaches them four quick, easy steps to verify online information. After practicing these four steps they create a public service announcement aimed at teaching one of these steps and spreading the message that it is necessary for everyone to fact-check information we see online every time we are going to share it or act on it.

Deconstructing Web Pages

In this lesson, students apply three techniques to verify sources of information they find online. Assuming the role of a student researching a science project, students must authenticate the information in an online article about the artificial sweetener, aspartame.

Hoax? Scholarly Research? Personal Opinion? You Decide!

This lesson is designed to help students determine the validity of information that is presented to them on the Internet. After reviewing a series of evaluation techniques for online resources, students form groups to assess selected websites based on accuracy and authority, advocacy and objectivity, and currency and coverage.

Mixed Signals: Verifying Online Information

In this lesson, students examine two websites about unlikely animals and learn how to effectively evaluate online sources. They then create a fake website that demonstrates the misleading signals that are often mistakenly taken as signs of reliability.

Reality Check: Getting the Goods on Science and Health

In this lesson, students start by considering the wide range of science and health information they are likely to encounter in news or through social media.

Reality Check: News You Can Use

In this lesson, students consider the meanings of the term “fake news” and learn facts about the news industry that will help them recognize legitimate sources of news.

Taming the Wild Wiki

In this lesson students are introduced to Wikipedia, the user-edited online encyclopedia, and given an overview of its strengths and weaknesses as a research source. They are taught how to evaluate the reliability of a Wikipedia article and then attempt to improve an existing article.

The Hero Project: Authenticating Online Information

In this lesson students are introduced to Internet search skills through researching a personal hero. By focusing on the early parts of the research process, students learn to select well-defined topics, ask relevant research questions and select effective keywords.