



## Lesson Plan

# Evaluating Information Sources for Accuracy

## Background

People learn about current events and hot topics through social media, news outlets, family members, scientific journals, etc. Sometimes we see different viewpoints about what is causing climate change. Not all of the information is accurate, so how can we make an informed opinion? The challenge is to be able to sort through various perspectives using careful research and critical thinking. The goal is to find the facts.

*“It is unequivocal that human influence has warmed the atmosphere, ocean and land.”*

- IPCC

## Defining Climate Change

**Climate change** is a long-term shift in weather conditions identified by changes in temperature, precipitation, winds, and other indicators. Climate change can involve both changes in average conditions and changes in variability, including, for example, extreme events.

Source: [Government of Canada: Causes of climate change](#)

**Climate change** may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or changes in land use. **Anthropogenic** means the product of humans' actions.

Source: [IPCC, 2018: Annex I: Glossary \[Matthews, J.B.R. \(ed.\)\]. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty \[Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield \(eds.\)\]. In Press.](#)

## Verifying the Accuracy of Information

### Peer Review Process

Peer-reviewed articles are read and evaluated by recognized researchers in the field. Third parties (i.e. two or three scholars not employed by the journal) review the article and recommend that it either be published, revised, or rejected. The peer review process ensures that publications meet the field's high criteria. Scholarly journals use the peer review process.



Each publication includes:

- Name of the author(s)
- Notes and/or references
- Research from the field
- Technical language intended for scholars and researchers in the discipline
- A plain, black and white appearance
- Few, if any, ads

Source: [SDSU Library & Information Access: Peer-Reviewed Articles](#)

### **Intergovernmental Panel on Climate Change (IPCC)**

The [Intergovernmental Panel on Climate Change](#) (IPCC) analyzes the science on climate change. Thousands of scientists from all over the world volunteer to author, contribute to, and review IPCC reports. The organization's publications undergo multiple stages of review from scientists and government, making them one of the most prestigious and credible sources of climate science information in the world.

"Thousands of people from all over the world contribute to the work of the IPCC. For the assessment reports, IPCC scientists volunteer their time to assess the thousands of scientific papers published each year to provide a comprehensive summary of what is known about the drivers of climate change, its impacts and future risks, and how adaptation and mitigation can reduce those risks."

Source: [About the IPCC](#)

In their most recent report, the IPCC says, "The evidence for human influence on recent climate change strengthened from the IPCC Second Assessment Report to the IPCC Fifth Assessment Report, and is now even stronger in this assessment. The IPCC Second Assessment Report (1995) concluded 'the balance of evidence suggests that there is a discernible human influence on global climate'. In subsequent assessments (TAR, 2001; AR4, 2007 and AR5, 2013), the evidence for human influence on the climate system was found to have progressively strengthened. AR5 concluded that human influence on the climate system is clear, evident from increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and physical understanding of the climate system."

Source: [IPCC, 2021: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change \[Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou \(eds.\)\]. Cambridge University Press. In Press.](#)



## Online Media

In March of 2017, Facebook and [MediaSmarts](#) collaborated to provide Facebook users with ten tips on how to spot false content online:

- **Be skeptical of headlines.** False news stories often have catchy headlines in all caps with exclamation points. If shocking claims in the headline sound unbelievable, they probably are.
- **Look closely at the URL.** A phony or look-alike URL may be a warning sign of false news. Many false news sites mimic authentic news sources by making small changes to the URL. You can go to the site to compare the URL to established sources.
- **Investigate the source.** Ensure that the story is written by a source that you trust with a reputation for accuracy. If the story comes from an unfamiliar organization, check their “About” section to learn more.
- **Watch for unusual formatting.** Many false news sites have misspellings or awkward layouts. Read carefully if you see these signs.
- **Consider the photos.** False news stories often contain manipulated images or videos. Sometimes the photo may be authentic, but taken out of context. You can search for the photo or image to verify where it came from.
- **Inspect the dates.** False news stories may contain timelines that make no sense, or event dates that have been altered.
- **Check the evidence.** Check the author's sources to confirm that they are accurate. Lack of evidence or reliance on unnamed experts may indicate a false news story.
- **Look at other reports.** If no other news source is reporting the same story, it may indicate that the story is false. If the story is reported by multiple sources you trust, it's more likely to be true.
- **Determine if the story was intended to be a joke.** Sometimes false news stories can be hard to distinguish from humor or satire.
- **Think critically.** Some stories are intentionally false. Only share news that you know to be credible.

Source: [MediaSmarts: How to recognize false content online – the new 5 Ws](#)



## Procedure

1. Read the **Defining Climate Change** and **Verifying the Accuracy of Information** sections of this lesson plan.
2. Read pages SPM5-SPM6 of “A.1 It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.”, of the peer-reviewed, Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.
3. Watch the example resource, **Climate Change 101 with Bill Nye** and discuss the example **Resource Analysis** chart (next page).
4. Pick one pair of resources from the list below to read and/or watch.

a.	It's Okay To Be Smart - <a href="#">How Ancient Ice Proves Climate Change is Real</a>	Prager University - <a href="#">What They Haven't Told You about Climate Change</a>
b.	Prince Ea - <a href="#">MAN vs EARTH</a>	The Pittsburgh Post-Gazette - <a href="#">The facts don't add up for human-caused global warming</a>
c.	Native Counselling Services of Alberta - <a href="#">Eco Despair</a>	Vancouver Sun - <a href="#">Brad Trost: Most Tories don't believe in human-caused climate change</a>

5. Analyze the pair of resources by filling out the **Resource Analysis** chart (attached).
6. Complete the **Discussion Questions** (attached).
7. Watch the Intergovernmental Panel on Climate Change's video "[Special Report on Climate Change and Land](#)" and do a resource analysis for this final resource.



## Example Resource



RESOURCE ANALYSIS	Example
<b>Outlet</b>	National Geographic
<b>Title</b>	Climate Change 101 with Bill Nye
<b>URL (if applicable)</b>	<a href="https://www.youtube.com/watch?v=EtW2rrLHs08">https://www.youtube.com/watch?v=EtW2rrLHs08</a>
<b>Date accessed</b>	October 5, 2021
<b>What is the main thesis of this resource?</b>	Non-naturally occurring greenhouse gases are increasing due to human activities, causing damaging effects for the earth.
<b>List the main points presented in the resource.</b>	<ul style="list-style-type: none"> <li>• Signs of climate change include ocean acidification, sea level rise and extreme weather.</li> <li>• Causes of climate change include human activities such as burning fossil fuels and increased greenhouse gases in the atmosphere.</li> <li>• Solutions for climate change include eating local foods, biking more and turning off electronics.</li> </ul>
<p><b>List the evidence provided.</b></p> <p>Did the resource include reputable sources? Were you able to find reputable sources to support this information?</p>	<ul style="list-style-type: none"> <li>• Temperatures have increased by 1.2°F to 1.4°F in the last century</li> <li>• 97% of climate scientists believe that human activities have caused the warmer temperatures</li> <li>• Sea levels have risen 6.7 inches in the last century</li> <li>• Sources include Bill Nye, National Geographic, <a href="https://www.epa.gov/">https://www.epa.gov/</a> <a href="https://climate.nasa.gov/">https://climate.nasa.gov/</a></li> </ul>

RESOURCE ANALYSIS	Source 1	Source 2	<a href="#">Special Report on Climate Change and Land</a>
Outlet			
Title			
URL (if applicable)			
Date accessed			
What is the main thesis of this resource?			
List the main points presented in the resource.			
<b>List the evidence provided.</b> Did the resource include reputable sources? Were you able to find reputable sources to support this information?			



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## Discussion Questions

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1. How can you identify an accurate source of scientific information?
  
2. What is the Intergovernmental Panel on Climate Change (IPCC)?
  
3. Provide examples of fact-based science and logic from the pair of resources you viewed.
  - a. Resource 1:
  
  
  - b. Resource 2:
  
4. Use a search engine to research the sources you chose. If applicable, visit the sources' websites. Do you think your sources are credible? Why or why not?
  - a. Source 1:
  
  
  - b. Source 2:
  
5. The next set of questions analyze the person or group delivering each message (i.e. the "messengers").
  - 5.1. Were the messengers charismatic?
    - a. Resource 1:
  
  
    - b. Resource 2:



**5.2.** How do you think the messengers' charisma could affect how the message is viewed?

**a.** Resource 1:

**b.** Resource 2:

**5.3.** In what field do your messengers have expertise?

**a.** Resource 1:

**b.** Resource 2:

**6.** Was the peer-reviewed article from the AR6 report, "[A.1 It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.](#)" hard to read? If so, explain why.

List three things that you learned from the article.





## Curriculum Connections

**Grade 8 Health Education: USC8.6** Examine and assess the concept of sustainability from many perspectives, and develop an understanding of its implications for the well-being of self, others, and the environment.

**English Language Arts: CR8.4** View critically and demonstrate comprehension of a variety of visual and multimedia texts including videos, television broadcasts, informational presentations, dramatic presentations, websites, and news programs to locate and interpret key messages and details, to develop conclusions, opinions, and understanding, and to evaluate the effectiveness of the text. **CR8.6** Read and demonstrate comprehension and interpretation of grade-appropriate texts including traditional and contemporary prose fiction, poetry, and plays from First Nations, Métis, and other cultures to evaluate the purpose, message, point of view, craft, values, and biases, stereotypes, or prejudices. **CR8.7** Read independently and demonstrate comprehension of a variety of information texts including understanding the main ideas and supporting evidence, explaining connections between new ideas and information and previous thoughts, and recognizing any biases or false reasoning.

**Grade 9 English Language Arts: CR9.5a** Listen purposefully to understand, analyze, and evaluate oral information and ideas from a range of texts including conversations, discussions, interviews, and speeches. **CR9.5b** Listen purposefully to understand, analyze, and evaluate oral information and ideas from a range of texts including directions and train of thought, main points, and presentation techniques. **CR9.7a** Read independently and demonstrate comprehension of a variety of information texts including expository essays, historical accounts, news articles, and scientific writing. **CR9.7b** Read independently and demonstrate comprehension of a variety of information texts including expository essays, historical accounts, news articles, and scientific writing.

**Grade 10 English Language Arts: CR A10.2** View, interpret, summarize, and draw conclusions about the ideas and information presented in a variety of illustrations, charts, graphs, and television, film, and video presentations including a documentary or current affairs program. **CR A10.3** Listen to, interpret, summarize, and draw conclusions about the ideas and information presented in a variety of literary and informational texts including group discussions, oral readings, interviews, and prepared talks about a topic being studied. **Science: SCI10-CD1** Assess the implications of human actions on the local and global climate and the sustainability of ecosystems. **SCI10-CD2** Investigate factors that influence Earth's climate system, including the role of the natural greenhouse effect.

**Grade 11 English Language Arts 20: CR 20.2** View, comprehend, and develop coherent and plausible interpretations of informational and literary First Nations, Metis, Saskatchewan, Canadian, and international texts (including multimedia advertising) that use specialized visual features including illustrations, photographs, art works, maps, charts, graphs. **CR 20.3** Listen to, comprehend, and develop coherent and plausible interpretations of grade-appropriate informational and literary First Nations, Metis, Saskatchewan, Canadian, and international texts, including spoken instructions, and argumentative and persuasive speeches. **Environmental Science 20: ES20-SDS1** Create and carry out a plan to explore one or more topics of personal interest relevant to Environmental Science 20 in depth. **ES20-ES1** Examine the methods, mindsets and purposes of environmental science. **ES20-AH2** Analyze the production, reliability and uses of geoscience data to investigate the effects of a changing climate on society and the environment.