

# FACT CHECKING IN AN ERA OF FAKE NEWS CURRICULUM GUIDE

## Timeframe:

50 minutes

## Target Audience:

Grades 6-12

## Content Area:

Digital Literacy

## Description:

Students will learn how to identify valid and reputable sources by reviewing a variety of sources, including paper-based and web-based sources of information, using the CRAAP Test (originally developed by CSU Chico). This activity provides an opportunity for students to learn more about how news is generated and how to think critically about the information available to them, either throughout their days or while researching a specific topic.

The optional extension activity teaches students about the different types of evidence that can be used in argumentation, including empirical and anecdotal evidences, as well as observations and expert judgements. Students will learn how to identify these types of evidences and their merits in argumentation.

## Objectives:

- Students will know:
  - The three types of evidence used in evidence-based argumentation (empirical, testimonial, and anecdotal evidence)
- Students will be able to:
  - Analyze key elements of digital media -- weighing evidence, evaluating sources, noting context and transparency -- to judge their reliability.
  - Distinguish between legitimate information and disinformation.
  - Gauge reliability and credibility of digital media

## Activity Introduction:

1. Introduce students to the activity with an open-ended question: “*What does the term ‘fake news’ mean to you?*” Allow students to reflect on this question as a classroom discussion.
2. Build on this discussion by showing one or both of the following videos. These short videos will orient students to how the process of developing news has changed over time and how advances in technology have made it easier for anyone to develop “news” or “user created content”. They also discuss how fake news proliferates through our social media networks.
  - a. [How False News Can Spread – Noah Tavlin](#)
  - b. [How to Choose Your News – Damon Brown](#)

### Activity Procedure:

1. Choose 1 assessment from the Stanford History Education Group (SHEG) or one of the GMO-related assessments we provided. Links are in the "Materials" section of the curriculum.
2. As a class, review the assessment while discussing the different components that may or may not make the source a credible piece of information. Have each student provide their reasoning as to why they thought it was credible and write these reasons on the board. Afterward, as a class, vote whether the source is credible.
3. Introduce students to The CRAAP Test. Emphasize that this is only one strategy for assessing credibility and that reading laterally is required to truly assess the credibility of a source. Discuss each category (currency, relevancy, accuracy, authority, and purpose) and why it is important to determining the credibility of a source. Compare the questions included in the test with the reasons students provided throughout the SHEG assessments.
4. Have students complete additional SHEG/GMO-related assessments in small groups of 3-4 to determine what makes the assessment credible or not.
5. Walk through each of the assessments and provide an opportunity for each group to report out on whether they decided it was a credible source or not. Write any new reasons that haven't already been addressed on the board. Be sure to have students emphasize WHY they decided that. This is important in helping them build skills associated with communicating their reasoning.

### Guiding Questions:

- What are the limitations of using checklists like the CRAAP Test to determine whether a source is credible?
- Who is responsible for fact checking information: the producer or the consumer?
- What are the consequences if you do not fact check the information you receive?
- What does the term fake news mean to you?
- What types of evidences persuade you to believe someone?

### Optional Additional Extensions:

- High School Extension:
  - Provide an opportunity for students to collect their own sources and analyze their credibility using The CRAAP Test. Follow that exercise with a more in-depth analysis of the contents by reading laterally about the contents of the source. Classrooms could be divided into groups and have each group focus on different social media platforms, types of information, or topics. Students should report out what they found to the classroom.
- Different Types of Evidences:
  - As a class, have students reflect on the types of evidences they have come across while reading sources and completing the assessments. Guiding questions like "What kind of evidences have you used to prove your point to someone?" Or "What types of arguments/evidences persuade you to believe someone?" will help students think about these topics.
  - List each type of evidence that students mention on the board. They will naturally start to group in to the three categories: empirical evidence (e.g. facts, statistics), opinions/judgments (e.g. quotes), and anecdotal evidence (e.g. stories). More information about each of these types of evidence is included in the Teacher Background section.

## Materials:

- CRAAP Test Handout – 1 per student
- A/V Set Up
- Stanford History Education Group Assessments
  - [Claims on YouTube](#)
  - [Evaluating Wikipedia](#)
  - [Claims on Twitter](#)
  - [Website Reliability](#)
- GMO-related examples
  - YouTube
    - i. Assessment #1 [Genetic engineering: The world's greatest scam?](#)
      - 1. Notes about this assessment:
        - a. The video was published in 2009, meaning that all of the statistics referenced within it need to be confirmed.
        - b. “Plants are cultivated outdoors where they cannot be controlled”. That statement isn’t specific to GMO plants, all plants that are grown outside can be difficult to control.
        - c. Imagery is really targeted, using a symbol similar to the nuclear waste graphic to show which plants are genetically modified. It also depicts the farm that these products would be used on as an industrial complex with smoke stacks.
        - d. The video combats the argument GMO crops produce higher yields by saying “this marketing mantra is a complete hoax” without providing any evidence as to why that claim might not be true.
        - e. The video claims that there are only 2 reasons why genetically modified plants are created: herbicide tolerance or insect resistance. There are multiple other reasons why GMO products are being developed: disease resistance being one major reason.
        - f. GM crops with an insect resistance do not “give off poisonous gases”.
        - g. Video producers tie the GM issue into the issue of deforestations in south and central America without citing any sources as to whether farms in deforested areas actually grow GM crops.
        - h. Video claims that soil and water table under a GM crop field is poisoned without citing any sources about whether that is true.
      - ii. Assessment #2: [GMOs 101 with Jeffrey Smith](#)
        - 1. Notes about this assessment:
          - a. Jeffrey Smith, the speaker in the video, is a self-published author, film producer, and well-known anti-GMO activist. He founded the Institute for Responsible Technology.
          - b. The language and imagery targets your emotions: “take DNA...and force it into other species” while animals are making sounds of distress in the background of the video.

- c. His definition for genetic modification doesn't address the fact that some GM products use genes from the same or related species to make the modification, as opposed to completely unrelated species.
  - d. Video was published in 2013, there are now 12+ major crop species that have been genetically modified.
  - e. He talks about the process in very simplified terms: "the crops absorb these weed killers, which are poisonous, and we eat them...we will talk about what can go wrong when we eat a weed killer." His language is targeted to your emotions (e.g. "poisonous", "weed killer").
  - f. He described *Bacillus thuringiensis* (Bt) as "basically a poison – it's an insecticide that breaks open the stomach of insects to kill them" which further highlights strong, value- and emotion-based language.
  - g. The Bt corn/insect imagery infers that the insect immediately dies upon ingesting the corn. Depending on the amount of Bt the insect has consumed, the insect will die within "a few hours or weeks" (source: [National Pesticide Information Center](#))
  - h. Plants modified to include the Bt gene are not "registered pesticides" as the speaker claims.
  - i. He does address that there are other plants that have been genetically modified to fight diseases but spends less than 5 seconds in a 6+ minute video discussing that side of genetic modification.
  - j. He relies on correlated data to imply that GMO products are the cause of an increase in health affects (cancer, heart disease, Alzheimer's, autism, Parkinson's, obesity)
  - k. He references a "GMO Summit" throughout the video, where he will dive into more information about each of the points he makes in the video, making it feel like the video was produced with the purpose of enhancing interest/selling tickets to that event, especially the "empowerment package you can invest in".
- Twitter
    - i. Example #1: GMO Diet Health Impacts
      - 1. <https://twitter.com/HealthRanger/status/1018344404912877568>
      - 2. Notes about this assessment:
        - a. "Health Ranger" publicizes article in the tweet as if it was recently published, but the [article at the link](#) was published in 2016, which further links to [another article](#) published by "Health Ranger" from 2012. This is an example of circular reporting.
        - b. Title of article "Eating GMO wheat may destroy your liver" is hyperbolized in Health Ranger's tweet: "GMO wheat causes liver failure."
        - c. The original scientific study is never linked to and therefore we can't truly assess the validity of the claims in any of the articles.

- d. Web-searching the website sources of information (NewsTarget and Natural News) reveals that these websites are related to each other and both are owned by “Health Ranger”.
    - e. [Media Bias/Fact Check](#), an online database of media bias, classifies both sites as a source of “right wing biased propaganda” and conspiracy-pseudoscience.
  - ii. Example #2: Monarch Butterflies
    - 1. <https://twitter.com/ScienceAlly/status/1017469823700226048>
    - 2. <https://twitter.com/GMWatch/status/1019596142311542787>
    - 3. Notes about this assessment:
      - a. Both of these posts cite the same scientific study, which concludes that there are multiple reasons why the monarch butterfly population is declining, with an increase in pesticides being only one of the potential factors. The study specifically identifies “the cause of the recent decline has been predominately attributed to the loss of breeding habitat, primarily in the U.S.” This decline in breeding habitat is “highly correlated with the adoption herbicide-tolerant genetically modified corn and soybeans...” (Semmens et. al. 2016, pg.2).
      - b. The article does not include any reference to glyphosphate or Roundup – the only mention of “herbicide” is in the above bullet point. The GM Watch tweet assumes that the article is referring to Monsanto’s Roundup and focuses on that in their tweet.
      - c. GM Watch tweet on July 18, 2018 references an [article](#) published on GM Watch in March 2016, which cites the original [study](#) (also published in March 2016)
      - d. The Alliance for Science tweet links to an [article](#) they published about the study, which references the multiple factors affecting monarch butterfly decline and also uses a variety of evidences to support that claim, as opposed to the GM Watch article, which only references the 2016 study.
- o Facebook
  - i. Example from [GMO Free USA's Facebook page](#), which links to [this study](#) and this [GM Watch article](#).
    - 1. Notes about this assessment:
      - a. Scientific article was published in Food and Nutrition Science, an international peer-reviewed journal dedicated to the latest advancement in food and nutrition sciences.
      - b. [GMO Free USA's](#) mission “is to harness independent science and agroecological concepts to advocate for clean and healthy food and ecological systems. We will educate consumers and other stakeholders about the potential hazards of genetically engineered organisms, synthetic pesticides, and advance the Precautionary Principle”, meaning that they have an inherent bias to publicize information that furthers their mission. They also organize and support national boycotts of food companies that use GMO ingredients.

- c. The language they include in the caption is copied verbatim from the abstract and conclusion of the study – there isn't any spin or new interpretation of the findings. The study is also recent (published in 2018).

**Grown in the USA**

**RESEARCHERS 'DOWN UNDER' FIND RATS FED U.S. TRIPLE STACK GMO CORN MAY DEVELOP LEAKY STOMACHS**

**TEN MALE RATS** were fed GMO corn produced by conventionally crossing GM varieties containing Monsanto Bt insecticidal toxin traits MON863 and MON810, and glyphosate-tolerant trait NK603 - hence the "triple stack." The GMO corn was grown in the U.S.A.

**6 month feeding trial**

**ANOTHER TEN** male rats were fed a commercially-grown non-GMO corn grown in Australia. The control corn was not sourced from the U.S. due to the difficulty of finding U.S. corn uncontaminated with GMO genes.

**THE RATS FED THE TRIPLE STACK GMO CORN DEVELOPED GAPS IN THE TIGHT JUNCTIONS OF THEIR STOMACH CELLS**

Cells that line the stomach normally form tight junctions that prevent bacteria, viruses or food particles leaking out from the stomach into body tissues.

More study is needed, say researchers, to determine if the gaps result in actual leakage and increased risk of allergies and microbial infections.

**Gonna wait for that before you boycott GMO corn that puts holes in your gut?**

[www.facebook.com/gmofreusa](http://www.facebook.com/gmofreusa) [www.gmofreusa.org](http://www.gmofreusa.org) [www.facebook.com/gmofreecanadagroup](http://www.facebook.com/gmofreecanadagroup)

**GMO Free USA**  
Like This Page · Yesterday

New Study: Rats Fed GMO Triple-Stack Insecticidal Corn May Develop Leaky Stomachs. From the abstract: "The study investigated the mucosa of the stomach. Alterations to tight junction apposition, gland dilatations with epithelial elongation and dysplasia in the GM-fed rats were observed. These results indicate that GM-corn may have an effect on rat stomach mucosa, which may have health implications." The Australian researchers conclude, "The stomachs of rats fed a 60% triple stack GM-corn diet exhibited ultrastructural alterations to tight junction apposition in the mucus-producing cells as well as gland dilatations exhibiting abnormal changes to their lining epithelium. This suggests that the GM corn or one or both of the insecticidal Cry proteins may have had adverse effects on rat stomachs and that chemical gastropathy may be the model of toxicity." GOT LEAKY GUT? It just might be that GMO corn. Boycott GMOs.

READ the study: <http://www.scirp.org/Journal/PaperInformation.aspx?PaperID=85687>

READ: <https://gmwatch.org/en/news/latest-news/18341-rats-fed-gm-stacked-trait-maize-developed-leaky-stomachs>

#LeakyStomachs #LeakyGut #GMOcorn #GMO #corn #maize #InsecticidalCorn #stomach #health #gmofreecanada #gmofreusa

Write a comment...

Figure 1: Facebook post from GMO Free USA citing a new study about GMO diets.

### Teacher Background:

Many people assume that because young people are fluent in social media they are equally perceptive about what they find there. The work done by the Stanford History Education Group Professor Sam Wineburg, shows the opposite to be true.

This activity provides an opportunity for students to learn more about how news is generated and how to think critically about the information available to them, either throughout their days or while researching a specific topic. This exercise is not focused on making students experts in the content of their source. Instead, it teaches students how to fact check sources to determine whether they are reputable and worth reading. Students will use the CRAAP Test developed by California State University Chico and adapted for this exercise to assess multiple types of sources for their credibility, including websites and social media platforms (e.g. Facebook, YouTube, and Twitter). In addition to understanding how to analyze the validity of more traditional sources, students will learn how to assess whether the information they receive from websites, Wikipedia pages, YouTube videos, or other platforms (e.g. Twitter) is credible and incorporate valid information in order to make informed decisions. This type of critical thinking is important in becoming civic, digital, and scientific literacy (Bråten, Strømsø, & Salmerón, 2011). Digital literacy is an important component of scientific literacy (Turiman, Omar, Daud, & Osman, 2012), and therefore has been emphasized in the Common Core requirements, which include

stipulations that students ought to use “relevant and sufficient evidence” to support their claims. Students will build upon these skills in subsequent case study activities that require students to find their own sources to support their position/argument.

Our society no longer relies on newspapers and journals for our information. With seemingly ubiquitous access to digital information, we receive a significant amount of conflicting information through a variety of online news sources and social media platforms, in addition to more traditional news outlets like newspapers and news broadcasts (Bråten, Strømsø, & Salmerón, 2011). Additionally, internet access and website platforms have made it easier for anyone to publish something they have developed, whether that’s a blog post, opinion article, YouTube video, tweet, or anything else. This proliferation in **user-generated content** blurs the lines between fact and opinion. We have also seen an increase in websites dedicated to developing and disseminating **fake news** and misinformation with hyperbolized, biased, or all together made up news stories (Wineburg & McGrew, 2017). Unfortunately, these are the news sources that often infiltrate our newsfeeds.

Ultimately, the credibility of a news report is largely determined by the reliability of the sources of information within that report. The most reliable news reports provide facts from informed, authoritative sources. Authors should incorporate a diversity of sources and perspectives into their articles and acknowledge the sources they use in order to enhance the credibility of their article. The [Society of Professional Journalists Code of Ethics](#) outlines multiple principals of ethical journalism, including verifying information before releasing it, using original sources, providing context, updating and correcting information throughout the life of a news story, and clearly identifying sources.

Like scientists, journalists collect evidence and draw conclusions based on what they have found. “**Journalistic truth**” is generally temporary in nature and is meant to change as stories develop or events unfold. This idea is similar to “**frontier science**”, new scientific discoveries that may change as researchers continue to learn more about the phenomena. What society views as “truth” changes as we accumulate more evidence to support it. In journalism, the truth is most likely to emerge when news stories include a variety of perspectives, as opposed to a single source (e.g. one eyewitness account). Journalistic truth relies heavily on context to put facts into perspective. Isolated facts cannot relay the truth and may even mislead the reader.

Students primarily approach information by “**reading vertically**” - reading the entire article before trying to figure out whether it is credible, basing that decision on the content of the source, as opposed to who wrote the article and how/where it was published (Bråten, Strømsø, & Salmerón, 2011; Goldman 2011). Conversely, fact-checkers tend to approach information by “**reading laterally**” - opening new tabs to search the internet for additional information related to what they originally saw. This process is meant to validate or refute the original information. After reviewing additional sources, the fact-checker returns to the original information to examine it more closely for validity. Unfortunately, this process is time consuming – a resource we can't employ every time we come across information in our lives (Wineburg and McGrew, 2017).

Many organizations, including Common Sense Media, the [News Literacy Project](#), and the American Library Association instruct students to evaluate the trustworthiness of online sources using various checklists (i.e. what is the domain? When was the website last updated? Is the contact person

provided?). Checklists and other types of explicit protocol enhance a students' critical thinking and scrutiny about a source of information (Goldman 2011).

We propose using an adapted version of **the CRAAP Test** as an initial test of credibility. The CRAAP test was originally developed by California State University Chico and was adapted for this exercise to include additional thought-provoking questions to encourage "**lateral reading**". This is a precursory method that should be followed with a more in-depth analysis of the contents and claims included in the source to determine whether the source is truly representing the facts accurately.

### **The CRAAP Test:**

**Currency:** The timeliness of the information. This is one of the most important components of credibility. Not only does the source need to be relevantly recent, it should also be citing current events, research, etc.

- When was the information published or posted?
- Is the information the source references up-to-date?
- Has the information been revised or updated?
- If the resource is on the web, are the links functional?

**Relevance:** The importance of the information for your needs.

- Does the information relate to your topic and/or answer some part of your question?
- Is the coverage appropriate for the topic, too broad, or too specific?
- Who is the intended audience?
- Have you looked at a variety of sources before determining this is one you will use
- Would you be comfortable citing this source in your research paper or in an argument?

**Authority:** The source of the information. In the age of technology, it is easy for anyone to say anything about anything and portray that as credible and accurate information. It is important for the person developing the information to either have the credentials and experience to develop that kind of information, or they are citing individuals that do have those credentials.

- Who is the author or publisher of the information? What is their background, education, and/or training? Are they qualified to write on the topic?
- Is there contact information, such as a publisher or email address?
- If the resource is on the web, does the URL reveal anything about the author or source?

**Accuracy:** The reliability, truthfulness, and correctness of the content. This criterion is focused on identifying misinformation and fake news, which is prolific on the internet. It is important to verify the information from one source with other sources, especially primary sources if possible.

- Where does the information come from?
- Is the information supported by evidence?
- Has the information been reviewed by an editor or the author's peers?
- Can you verify any of the information in another source?
- How do the facts and evidence in this source compare to other sources?
- Does the source reflect one viewpoint or a variety of perspectives?
- Does the author document their sources?
- Does the language or tone seem unbiased and free of emotion?
- Are there spelling, grammar, or typographical errors?



**Purpose:** The reason the information exists. Some information is developed for a specific purpose: to drive ad revenue via increased clicks, bias individuals against a position/person/platform, or advertise a product/organization. Sources of information with an inherent objective are likely not as credible.

- What is the purpose of the information? Is it to inform, teach, sell, entertain, or persuade?
- Do the authors/sponsors make their intentions or purpose clear?
- Is the information presented as facts, opinions, or propaganda?  
Is the information objective or does it appeal to emotions and/or biases?

The CRAAP Test is a great tool to initially determine whether a source is credible. However, it is important to verify that what the source is saying is accurate – that it is citing other relevant and current articles and accurately contextualizing the facts they are stating. Many studies conclude that individuals make different judgements about the trustworthiness of a source if they read the entire article or a short summary (Goldman 2011). For example, the Stanford History Education Group has used The CRAAP Test to determine that a website is credible, only to determine that it is inaccurately portraying the facts from the studies it cites in order to support the claim the author is making. Yes, the author is citing their sources (so it passes The CRAAP Test), but it isn't truly a credible source. Students can build on their news literacy skills but employing additional techniques, such as:

- Reading laterally, as described above. Some media literacy and critical scholars call the process of verifying details, facts, quotes, etc. with multiple sources **triangulation**. Some questions students can ask themselves to guide this process include:
  - Does the website mention/link to a study or source? Look up the source/study. Do you think it's being accurately reflected and reported?
  - Are officials being cited? Can you confirm their quotes elsewhere?
- Exercising common sense – sources that appeal to your emotions or include hyperbolized or sensationalized information in the headline may be misrepresenting information as a means of getting clicks (and subsequent ad revenue). If the source says something that is too good to be true or unbelievable in nature, it should be verified.
- Read the "About Us" section or visit the user's profile to learn more about the organization or individual posting the information to get a sense of whether there might be any bias in what they are publishing. Websites lacking an "About Us", "Contact Us", or other identifying information likely aren't legitimate. You can also look the organization up on fact-checking websites like [www.snopes.com](http://www.snopes.com) or [www.politifact.com](http://www.politifact.com).
- Some sources cite scientific studies that may have been retracted or discredited, which are no longer valid or reputable sources of information. [Retraction Watch](#), a project by The Center for Scientific Integrity, is a resource for learning more about the process and reasoning associated with retracting scientific studies. You can determine whether a source has been retracted by web-searching its title with the term "retracted".

[Here is a quick breakdown of how you can do this quickly.](#)

Lastly, it is suggested that students are instructed how to evaluate different sources of scientific evidence (Acar, Turkmen, & Roychoudhury, 2010). If you choose to incorporate the extension focused on the different types of evidence, here is some preliminary information about the three different types of evidence that can be used for effective argumentation:

- Empirical evidence: Empirical evidence is information acquired by observation or experimentation. This is one of the strongest types of evidence available for strengthening a claim. It ranges from raw data to analyzed data presented as a number or percentage. This type of evidence has been proven as true, either via some type of analysis or over time. Examples include facts, statistics, raw data points...
- Testimonial evidence: This type of evidence relies on the credibility of the speaker that is being cited to provide credibility to their claim. Examples include expert opinions, eyewitness accounts, quotes, celebrity endorsements...
- Anecdotal evidence: Storytelling is one of the primary characteristics of anecdotal evidence. This type of evidence can be very useful for disproving generalizations because you only need one example to contradict that type of claim. Anecdotal evidence is most effective when it is used in conjunction with other types of evidence. Examples include stories, analogies, examples...

### Resources:

- Schulten, K. and Brown, A.C. (2017, Jan 19). "Evaluating Sources in a 'Post-Truth' World: Ideas for Teaching and Learning About Fake News". *New York Times*. Retrieved from: <https://www.nytimes.com/2017/01/19/learning/lesson-plans/evaluating-sources-in-a-post-truth-world-ideas-for-teaching-and-learning-about-fake-news.html>
- [Stanford History Education Group](#)
  - [Evaluating Information: the Cornerstone of Online Civic Engagement](#)
- [Center for News Literacy Digital Resource Center](#)
- [McGrew et al. 2018. Can Students Evaluate Online Sources? Learning From Assessments of Civic Online Reasoning.](#)
- [Why we need a new approach to teaching digital literacy.](#)
- [Canada's Centre for Digital and Media Literacy](#)
  - [How to recognize false content online – the new 5 Ws.](#)
- Video Resources (appropriate for classroom settings)
  - [How False News Can Spread – Noah Tavlin](#)
  - [How to Choose Your News – Damon Brown](#)

### Next Generation Science Standards:

- Disciplinary Core Ideas: Many may work depending on what content the lesson is applied to
- Practices: Engaging in Argument from Evidence; Obtaining, Evaluating, and Communicating Information
- Crosscutting Concepts: Patterns