



LESSON PLAN

Level: Grades 7 to 10

About the Author: MediaSmarts

Deconstructing Web Pages



This lesson is part of *USE, UNDERSTAND & CREATE: A Digital Literacy Framework for Canadian Schools*: <http://mediasmarts.ca/teacher-resources/digital-literacy-framework>.

Overview

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.

Learning Outcomes

Students will:

- understand the importance of authenticating online resources
- recognize the signs of bias and omission in information
- use a template to authenticate Web sources
- use meta-information search techniques to validate online information

Preparation and Materials

- students will need access to the Internet in order to complete their assignments

Photocopy:

- teaching backgrounder *Deconstructing Web Pages*
- student handouts *Three Ways to Verify a Website* and *Deconstructing Web Pages* work sheet

Procedure

Assign note-takers to tally student responses on the board. Ask students the following questions:

- How many of you use the Internet for research and homework?



- Can you think of any advantages in using a library as a homework resource (either a school library or a public library) instead of the Internet? (*Sometimes it's better to have fewer choices! The amount of information on the Internet can be overwhelming. Libraries — especially school libraries — are usually **curated** collections, so there's less work to do in verifying your sources. Also, librarians are an essential resource in helping you find and verify information.*)
- What are the advantages of the Internet over more traditional resources?
- What are the disadvantages?
- What is the difference between publishing material on the Internet and publishing material in books? (*Traditional publishing incorporates a series of "gatekeepers" such as editors, proofreaders and fact checkers. On the Internet, authors can bypass these gatekeepers. As long as you have the technical know-how to create a web page, you can publish your thoughts online.*)
- How much of the information you find online do you think is true and can be trusted - all of it; most of it; some of it; none of it?
- Do you ever do anything to confirm that the information you have found online is true and can be trusted? (**Point for comparison:** *In MediaSmarts' Young Canadians in A Wired World (YCWW) survey, 89% of students said that they verify online information when it's for school work. However, significantly fewer students (66%) verify online information when it's for their own personal interest.*)
- For those of you who answered "yes," what do you do to check that the information you find online is reliable? (**Point for comparison:** *In the YCWW survey, the most common responses were: search inside a site and look at other sources to see if they say the same thing, 75%; see if the source comes from an expert, 59%; ask a teacher for good sites or to check a site, 54%; check to see if opinions are backed up by facts, 51% and check the date of publication or last update, 50%.*)

It's important that all of us - adults and young people- learn how to tell if online information is accurate and trustworthy.

Distribute the student handout *Three Ways to Verify a Website* and review the main points with students.

Activity

- Individually or in pairs, have students complete the *Deconstructing Web Pages* work sheet.
- Once students have been graded and the work sheets have been returned, take up the answers as a class. (The teacher backgrounder *Deconstructing Web Pages* contains the answers to this assignment.)

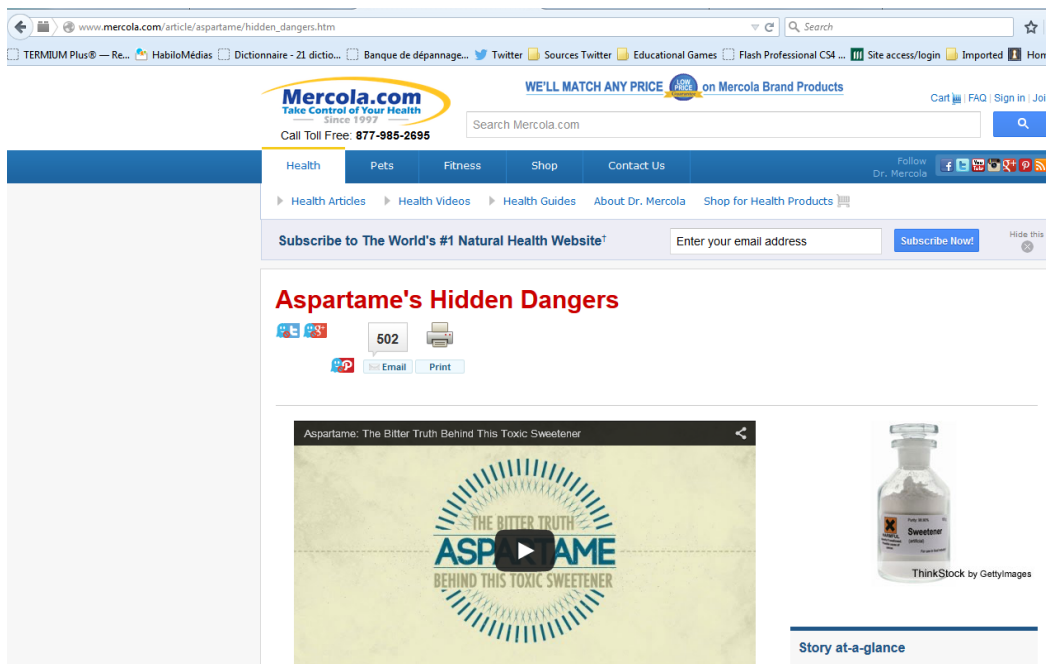
Evaluation

Completed work sheets



Deconstructing Web Pages

This exercise takes you step by step through the process of deconstructing a web page in order to determine its credibility as a source of information. Imagine that you're using the Internet to research a science project on the artificial sweetener, aspartame. If the first response to your Web search is the page shown here, you might want to run to your kitchen and toss out that can of Diet Coke.



http://www.mercola.com/article/aspartame/hidden_dangers.htm

The content on the page displayed above was written by “Dr. Joseph Mercola”, who owns and operates “Mercola.com”, which refers to itself as “The World’s #1 Natural Health Website”. On this particular page about aspartame, Dr. Mercola quotes a number of experts who have discovered that:

- Aspartame is responsible for over 85 percent of adverse food reactions to food additives (this number is 75% in the video).
- Five people have died from aspartame poisoning.
- It is associated with birth defects, cancer, diabetes, multiple sclerosis, Alzheimer’s disease and many more.
- A conspiracy between drug and chemical companies prevents this from being known.
- Government leaders and medical associations are oblivious to this danger or have been manipulated.

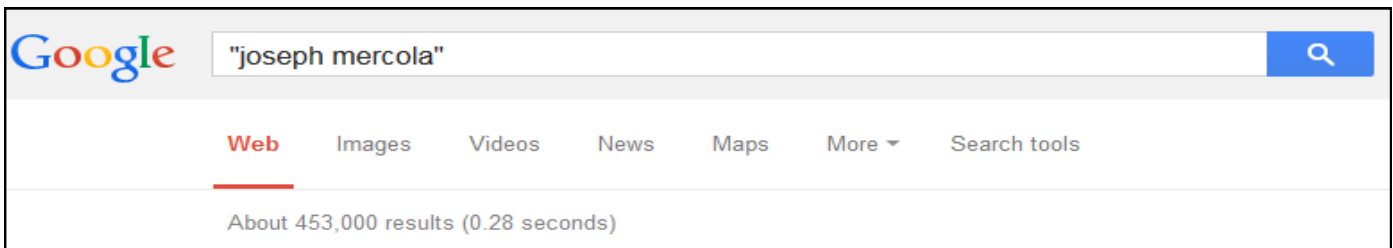
Though these statements are passionate, further research is needed before accepting them as facts. Let’s try *Three Ways to Verify a Website*.



Verify the Source

Who is Dr. Joseph Mercola and WHO sponsored his research? Is information about the author and research clearly stated or easy to access?

The “About Dr. Mercola” page reveals that Dr. Mercola is an “osteopathic physician”. According to the American Osteopathic Association, osteopaths “practice a ‘whole person’ approach to medicine. Instead of just treating you for specific symptoms or illnesses, they regard your body as an integrated whole.” The “About” page also lists his education and has a copy of his license to practice in the State of Illinois. He is also a Fellow of the American College of Nutrition.



If we do a Google search for “joseph mercola,” however, our first result is a Wikipedia article that tells us that Dr. Mercola has promoted anti-vaccination views and ineffective treatments such as homeopathy. We also see that he sells dietary supplements that are supposedly for the problems he says are caused by substances like aspartame (suggesting his views may be *biased* in a way that makes him unreliable as an expert) and that he’s been warned several times by the U.S. Food and Drug Administration about making false claims about his products.

Returning to the Google search results, we see several more articles from different sources saying that Dr. Mercola is not considered a reliable expert on health topics.

Consult Other Sources

A critical reader might wonder why, if aspartame is responsible for so many serious health problems, Canadian and American medical associations have not raised the alarm. It might be a good idea to see what sources that we know are reliable have to say about it:

On its website, Health Canada states that in addition to the extensive testing it has done that determined the safety of aspartame, “...other scientific advisory bodies such as the Scientific Committee for Food of the European Community, and the Joint Expert Committee on Food Additives (JECFA) of the United Nations Food and Agriculture Organization and World Health Organization have reviewed all the available safety studies and have found aspartame to be safe” and that more than 90 countries around the world have also reviewed aspartame and “found it to be safe for human consumption and allow its use in various foods.” (<http://www.hc-sc.gc.ca/fn-an/securit/addit/sweeten-edulcor/aspartame-eng.php>)

In 2013, the European Food Safety Authority re-tested the safety of aspartame and found that “aspartame was not of safety concern at the current aspartame exposure estimates.” (<https://efsa.onlinelibrary.wiley.com/doi/abs/10.2903/j.efsa.2013.3496>)

The National Multiple Sclerosis Society states that “No scientific evidence supports the claims that aspartame — an artificial sweetener used in many diet soft drinks and other foods — causes MS.” (<https://www.nationalmssociety.org/What-is-MS/What-Causes-MS#section-5>)



The American Cancer Society's page dedicated to aspartame and its potential side effects cites many researchers attesting to its safety. For example: "In the largest study of this issue, researchers from the NCI (National Cancer Institute) looked at cancer rates in more than 500,000 older adults. The study found that, compared to people who did not drink aspartame-containing beverages, those who did drink them did not have an increased risk of lymphomas, leukemias or brain tumors."

Even if Dr. Mercola is correct about the FDA, all these organisations and countries would have to be corrupt and/or incompetent in order to support his general claims about the danger of aspartame.

We can also use a custom search of reliable science sources (www.bit.ly/science-search) to see if Dr. Mercola's claim fits with the *scientific consensus* (what most scientists believe). A claim that doesn't fit with the consensus may be true, but it needs more evidence to support it than one, because the consensus represents what most scientists have found so far. Searching for "aspartame" with the custom search shows us that while there's some evidence of different possible harms from aspartame, it's nowhere near as clear as Dr. Mercola claims.

Wikipedia is also a good place to look to get the consensus on a topic, because each Wikipedia article represents the consensus of its editors. Checking the Wikipedia page on aspartame tells us that aspartame is "one of the most rigorously-tested food ingredients" and it has been found safe by over 100 regulatory bodies.

Use Fact-Checking Tools

One of the quickest ways of checking a claim is to see if a fact-checker has debunked it. You can visit a fact-checker such as Snopes.com or use our custom search of ten fact-checkers, www.bit.ly/fact-search.

Doing a search for "aspartame" finds that a number of claims about it have been checked, and they were either debunked or shown to be unproven. A search for "Joseph Mercola" shows that many of his claims have been debunked. A search for "Joseph Mercola" and "aspartame" shows that his claims about aspartame (and sucralose, another artificial sweetener) have been specifically debunked.



Three Ways to Verify a Website

It's easy for anyone to make a website, video or other source that looks professional and reliable. It's also easy for you to double-check and find out if they really *are* reliable.

Here are three ways to verify if a website, or a specific piece of information on a website, are reliable. Most of the time you will only need one of these.

1. Verify the Source

Go to a search engine like Google, or an online encyclopedia like Wikipedia, and search for the site.

If a search for the site's name gives you too many different results, you can search for its web address instead.

This search will also help you find out if the source is reliable. Once you've found some information about the source that isn't from its own website, ask these three questions:

1. Do they really exist?

It's easy to make fake pictures, fake websites and fake social network profiles that look just as real and professional as anything out there.

"About Us" pages and profiles are easy to fake, so do a search find out if other people say they really exist. Pay attention to things that are hard to fake: for example, it's easy to make a fake website, but if other websites you know are real and reliable link to it then it's a sign they think the source is real.

2. Are they who they say they are?

It's easy to pretend to be someone else online, so once you know the source really exists, you need to find out if what you're looking at really came from them.

To find out if you're on an organization's real website or social network profile, do a search for them and compare the top result to the site you're on.

3. Are they trustworthy?

For sources of general information, like newspapers, that means asking if they have a process for making sure they're giving you good information, and a good track record of doing it. How often do they make mistakes? If they do make mistakes, do they admit them and publish corrections? Are they willing to publish things their owners, or their readers, wouldn't agree with?

For more specialized sources, you want to do a search to find out whether they're experts or authorities on that topic. Being an expert is more than just being a doctor, a scientist or a professor: make sure they are an expert in the area that they are talking about. (For common names or people who aren't particularly famous, you may need to add the name of the website or the topic they claim to be an expert on.)

You also want to make sure their position isn't biased, but don't mix up bias and authority. A biased source starts with what they believe and then chooses or interprets the facts to fit those beliefs. Someone who is actually an expert on something will probably have stronger opinions about it than someone who isn't – but they'll be better-informed opinions.



2. Check Other Sources

Use this technique to find out whether something agrees with what most experts on that topic think – what’s called the *consensus* view. Sometimes claims that go against the consensus turn out to be true, but they need to give a lot more evidence because that’s what consensus is — all the evidence that scientists (or other experts in a particular field) have gathered so far.

Wikipedia is also a good place to look to get the consensus on a topic, because each Wikipedia article represents the consensus of its editors.

You can use our custom science search, bit.ly/science-search to find the consensus on specialist topics like science and medicine.

3. Use Fact-Checking Tools

One of the quickest ways of checking a claim is to see if a fact-checker has debunked it. You can visit a fact-checker such as Snopes.com or use our custom search of ten fact-checkers, www.bit.ly/fact-search.



Deconstructing Web Pages Work Sheet

This exercise takes you step by step through the process of deconstructing a web page in order to determine its credibility as a source of information.

For this exercise, you will be using all three techniques covered in the *Three Ways to Verify a Website* handout. However, most often you will be able to get an answer using just one.

1. Verify the Source

Use online tools such as Google and Wikipedia to answer the following questions:

1. Does the source really exist? How do you know?

2. Are they who they say they are? How do you know?

3. Are they trustworthy? How do you know?

2. Check Other Sources

Do Doctor Mercola's claims about aspartame agree with the *scientific consensus* (what most experts agree on the topic)? How do you know?

3. Use Fact-Checking Tools

Have any of Doctor Mercola's claims about aspartame been debunked by fact-checkers? How do you know?

