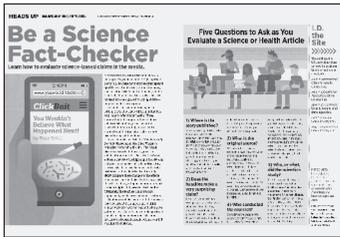


TEACHER'S GUIDE



Subjects

- Science Literacy
- English Language Arts
- Health/Life Skills

Common Core State Standards

- RST.6-8.1 / RST.9-10.1
- Cite specific textual evidence to support analysis of science and technical texts
- W.6-8.1 / W.9-10.1
- Write arguments to support claims, using valid reasoning and relevant and sufficient evidence

Next Generation Science Standards

- MS-LS1.D / HS-LS1.D
- Information Processing

National Science Education Standards

- Personal Health
- Science and technology in society/Science and technology in local, national, and global challenges

National Council for the Social Studies

- 8. Science, Technology, and Society

TOOLS & RESOURCES

Vocabulary Tools

Visit scholastic.com/headsup/sciencefactchecker for a vocabulary list to support this article.

Additional Teaching Resources

headsup.scholastic.com/teachers and teens.drugabuse.gov

Be a Science Fact-Checker

Science literacy is an important skill for everyone. That's especially true for teens who are inundated with stories on social media about important topics such as their health. Many of the articles found on Facebook or Twitter make claims that are not backed up by scientific evidence. By sharing the student article "Be a Science Fact-Checker" and teaching the lesson plan below, you will help students build skills that let them separate good science from misinformation. In the paired worksheet (see reverse side), students will put these tools to use by critically analyzing a story in which scientific facts were misrepresented, with some serious health consequences.



Critical Thinking

- 1) Many websites publish stories about science and health. Is every article you read based on scientific fact? How might you distinguish a fact-based health article from one that is not backed by scientific proof? Give reasons to support your answer. *(Answers may include that every article is not based on scientific evidence. You might distinguish the two by asking questions that lead you to understand the validity of the group that conducted the research, the trustworthiness of the site in which the study was published, and whether or not the study was conducted in a scientific manner.)*
- 2) Misleading news articles often spread over the internet faster than factual articles. Why do you think this is true? *(Answers may include that misleading articles often have exaggerated headlines or make surprising claims. These articles catch readers' attention and may cause them to be shared more often.)*
- 3) "Fake news" has been used to describe many different types of news. According to most media experts, "fake news" contains false or inaccurate information. What are some reasons a science article might be labeled "fake news"? Cite evidence from the text to support your answer. *(Answers may vary but may include an article that describes research from a biased source, an article with a surprising headline that isn't supported by the study, etc.)*

Writing Prompts

- **Grades 6-8:** Explain why it is important to read an entire article instead of just the headline.
- **Grades 9-10:** Explain this statement: Journalists must learn about the scientists who have conducted research before they write an article about their study.

- **Grades 11-12:** Experts warn social media users: "Think before you share." Explain the important steps that readers should take before they click "Share."

Paired Reading

- "Say What? 'Scientific Method'" <https://teens.drugabuse.gov/blog/post/say-what-scientific-method>
- **Writing Prompt:** What is replication? How does it help prevent misleading or inaccurate science stories from being published? Use text evidence from "Say What? 'Scientific Method'" and "Be a Science Fact-Checker" to support your answers.

Student Worksheet

The worksheet on the reverse side includes a news story about a study on drugs and addiction. Students will read and analyze the story using the critical-reading tips they learned in the student article. They then will answer questions to explain ways in which the story may be misleading, and they'll cite evidence to support their arguments.

Answers: 1. Answers will vary but may include the following points as supporting evidence: *The headline exaggerates the findings of the study; the research was published as a one-paragraph letter to the editor and was not a peer-reviewed article.*

2. Answers will vary but may include that the study did not include enough data to support the claim that opioids are not addictive. Some limitations in the study are as follows: *a) The study did not include patients who were given opioid prescriptions to use at home. These patients may be more likely to develop addiction than those using the drugs only while in the hospital. b) The study assumed that patients with no record of addiction treatment did not develop the disease. Patients could have developed addiction but it was never reported in their records.*

CAN YOU SPOT MISLEADING NEWS?

In the article “Be a Science Fact-Checker,” you learned that news articles are sometimes misleading. If false news spreads, it can have serious results.

For example, a paragraph written by two researchers appeared in the letter to the editor section of a scientific journal in 1980. The scientists presented data about how

often addiction developed in hospital patients who had been given opioid drugs. Opioids are powerful pain medications that are highly addictive. But the letter stated that few hospital patients developed addiction.

The letter has been cited in many articles. It has been used as evidence that opioids are not addictive. But it is now known that

this conclusion was misleading. Drug companies that make opioids used the letter to convince doctors that the drugs had a very low risk of addiction. In the following years, the number of opioid prescriptions increased dramatically. This misleading interpretation has led to the growing misuse of opioids. It has also led to a deadly overdose crisis.

ACTIVITY

DIRECTIONS: In this activity, you’ll use the tools you learned in “Be a Science Fact-Checker” to analyze a misleading news article about the letter described above. Read the article “Drugs Don’t Cause Addiction” (at right). Identify ways in which it is misleading. Then answer the questions below on a separate piece of paper.

QUESTIONS

1. How is this article misleading?

As you read, use the five critical-reading questions from the article “Be a Science Fact-Checker” to guide you. What information is misleading in this article? Give reasons to support your answer.

2. What evidence is missing?

In the article, the claim that opioids are not addictive is not backed by sufficient evidence. Think critically about how the study was conducted. Did the scientists collect enough data to support the conclusion? Describe one limitation of the study. Cite evidence from the text to support your answer.

