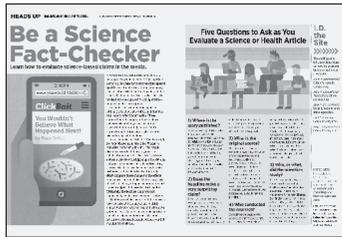


TEACHER'S GUIDE



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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) Today, there are many different types of sites that publish what appear to be news stories about science and health. Explain why it is important to research these sites before reading the articles. What questions might you ask about the sites? *(Answers may include that sites may have a bias, such as to sell health products, or may publish articles that make claims that are not backed by scientific evidence. You might ask who created the site and what their affiliation is, what the original source is for the stories they publish, etc.)*
- 2) Misleading news articles often spread over the internet faster than factual articles from mainstream sources. 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” is a term that has been used recently to describe many different types of news. According to most media experts, “fake news” is something that intentionally 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 known biased source without revealing the bias, or an article that makes claims that aren’t supported by the study, etc.)*

Writing Prompts

- **Grades 6–8:** Explain why it is important to read an article completely before you make a judgment about what it says.
- **Grades 9–10:** Explain why it is important for journalists to find out more about the scientists who have conducted research before they write an article about the results of a study.

- **Grades 11–12:** Experts warn social media users: “Think before you share.” Use information from the article to explain why this is important. What steps should readers 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 the following points: *a) The study did not include sufficient evidence to support the claim that opioids are not addictive. b) 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 in the hospital. c) The study assumed that patients with no record of addiction treatment in their medical reports 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 inaccurate news spreads, it can have serious consequences.

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

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

The letter has frequently been cited in other articles as evidence that opioids are not addictive. But it is now known that this conclusion was

misleading. Drug companies that make opioid medications used the letter to persuade doctors that the drugs had a very low risk of addiction. In the following years, the number of opioid prescriptions increased dramatically. This inaccurate interpretation has contributed to the growing misuse of the drugs and has 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 critically analyze a misleading news article about the letter described above. Read the article “Drugs Don’t Cause Addiction” (at right) and 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?

Use the five critical-reading questions from the article “Be a Science Fact-Checker” to analyze the article. What is inaccurate or misleading in this article? Describe at least two factors that support your argument.

2. What evidence is missing? The article contains other clues that 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 all of the relevant data to support the conclusion? Describe at least one limitation of the study. Cite evidence from the text to support your answer.

