

# ScienceNews

## EDUCATOR GUIDE



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**June 8, 2019**  
**Just the Facts**



SOCIETY FOR SCIENCE & THE PUBLIC

## About this Guide

This guide reviews ways to critically evaluate the trustworthiness of news stories. Sections of this guide can be used individually or together depending on the desired depth and available time.

### This Guide includes:

**Article-based observation, Q&A** — Students will answer questions based on the *Science News* article "[Measles erases immune memory](#)," Readability: 11.1. Questions cover factors related to trustworthiness, including the author's credentials, the citing of primary sources and the inclusion of outside experts.

**Article-based observations, questions only** — These questions are formatted so it's easy to print them out as a worksheet.

**Cross-curricular connections, teacher guide** — After asking students where they get their news and how they share it, these discussion prompts explore characteristics of a story that can provide clues to its quality and credibility.

### Activity: News You Can Trust?

**Purpose:** Students will develop their critical thinking skills by evaluating and rating the trustworthiness of an article and will practice presentation skills by sharing the information with the class. An optional extension asks students to compare their article to "[Measles erases immune memory](#)."

**Approximate class time:** 1 class period.

**Standards**

Next Generation Science	Common Core ELA
<a href="#">Engineering Design: HS-ETS1-2, HS-ETS1-3</a>	<a href="#">Reading Informational Text (RI): 1, 2, 4, 5, 7</a>
	<a href="#">Writing (W): 1, 2, 3, 4, 6, 7, 8, 9</a>
	<a href="#">Speaking and Listening (SL): 1, 2, 4, 5, 6</a>
	<a href="#">Reading for Literacy in Science and Technical Subjects (RST): 1, 2, 3, 4, 5, 7, 8, 9</a>
	<a href="#">Writing Literacy in History/Social Studies and Science and Technical Subjects (WHST): 1, 2, 4, 7, 8, 9</a>

### Article-Based Observation, Q&A

**Directions:** After your students read "[Measles erases immune memory](#)," ask them to answer the following questions.

**Note to teachers:** You can use these same questions for any *Science News* article.

**1. Based on the headline alone, what is the main point of the article?**

The point of the article is that measles can not only cause an immediate infection but also affect the immune system in such a way that people are more vulnerable to other, future infections.

**2. Does the content of the article support the headline? Cite at least two examples in your answer.**

Yes. The author points to scientific studies that have found evidence that measles affects the immune system long-term. One study found that, as scientist Rik de Swart says, "the virus preferentially infects cells in the immune system that carry the memory of previously experienced infections." In another study, researchers found that children who had measles were more likely to need prescriptions for infections afterward than children who hadn't had measles.

**3. Who is the author? Based on what you can find in *Science News* magazine or on the About *Science News* page at [www.sciencenews.org](http://www.sciencenews.org), is the author a regular writer for *Science News*? How do you know? What topics does she cover?**

Laura Sanders. Yes, Laura Sanders is a staff writer; she appears on the masthead of the magazine and is listed as "staff" online. Laura regularly reports on neuroscience.

**4. When was the article first published and where?**

In the June 8, 2019 issue of *Science News* magazine. (Or, May 21, 2019 online at [www.sciencenews.org](http://www.sciencenews.org))

**5. Is the article based on primary sources? If so, what are they?**

Yes, the article is based on primary sources. Laura speaks to Rik de Swart, who has done research on the immune effects of measles in children in the Dutch Bible Belt. She cites data presented in multiple research papers, including data on prescriptions for infections in U.K. children, from a *BMJ Open* paper published in 2018. If you are viewing the article online at [www.sciencenews.org](http://www.sciencenews.org), the primary sources are listed in the citations section at the end of the article.

**6. Does the article quote any outside experts? If so, who are they and how do they contribute to the article?**

Yes. Laura quotes Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases. Fauci wasn't involved in any of the research mentioned. His role is to add context to the story, by explaining how the loss of immune cells can affect a person's health.

**7. How many fact-based statements can you find in the article? Cite one example. Can you find any opinion-based statements? If so, list one example.**

Students should be able to find dozens of fact-based statements (almost every sentence has a factual underpinning), but the article generally avoids opinion-based statements. Even quotes from the researchers are based on their expert knowledge and data. The one exception might be the last line in which Michael Mina of Harvard says, "It's so simple."

**8. What does your answer to Question 7 reveal to you about the article's purpose and/or author's intentions?**

The article is intended to inform the audience about existing and new research being done. The author is trying to convey facts and not trying to take a position or persuade the reader that some course of action is right or wrong.

**9. Did you have any background knowledge on the topic before reading this article? If so, what did you know?**

Student answers will vary but they might know that they or family members have received the measles, mumps and rubella vaccine. They might also have heard about the recent outbreaks in the United States.

**10. How does the article challenge your existing knowledge? Cite a specific example.**

Student answers will vary, but they might be surprised, for example, that the measles virus can linger in the air and on surfaces for up to two hours. They might not have known how the measles virus spreads through the body or the worrisome outcomes associated with a measles infection. It might be a surprise that the virus can affect the immune system after the initial infection.

**Article-Based Observation, Q**

**Directions:** After reading "[Measles erases immune memory](#)," answer the following questions.

1. Based on the headline alone, what is the main point of the article?
  
  
  
  
  
  
  
  
  
  
2. Does the content of the article support the headline? Cite at least two examples in your answer.
  
  
  
  
  
  
  
  
  
  
3. Who is the author? Based on what you can find in *Science News* magazine or on the About *Science News* page at [www.sciencenews.org](http://www.sciencenews.org), is the author a regular writer for *Science News*? How do you know? What topics does she cover?
  
  
  
  
  
  
  
  
  
  
4. When was the article first published and where?
  
  
  
  
  
  
  
  
  
  
5. Is the article based on primary sources? If so, what are they?
  
  
  
  
  
  
  
  
  
  
6. Does the article quote any outside experts? If so, who are they and how do they contribute to the article?
  
  
  
  
  
  
  
  
  
  
7. How many fact-based statements can you find in the article? Cite one example. Can you find any opinion-based statements? If so, list one example.
  
  
  
  
  
  
  
  
  
  
8. What does your answer to Question 7 reveal to you about the article's purpose and/or author's intentions?

**9. Did you have any background knowledge on the topic before reading this article? If so, what did you know?**

**10. How does the article challenge your existing knowledge? Cite a specific example.**

## Cross-Curricular Connections, teacher guide

**Directions:** The discussion prompts below encourage students to think about where they get their news and how they evaluate the trustworthiness of a news story. After opening with the general discussion prompts, ask your students to evaluate how various characteristics of a news story (whether a text article, video or audio report) can offer clues to its quality. This discussion pairs well with [the activity News You Can Trust?](#)

### General discussion prompts

1. Where do you get your general news? What about news about science? Why do you go to these sources?
2. What types of news do you often share with others? How do you share news?
3. Do you evaluate whether information is trustworthy before sharing it with others? Why or why not?
4. If you do evaluate the quality of information, what clues do you use to assess trustworthiness?

### Clues to quality

1. How can information about **the author** offer clues to the truth of a news story?

*Students should consider whether the author is an expert or not, has an agenda or not, is independent or an advocate and so on. Opinions that the author has shared elsewhere can inform where that author is coming from.*

2. What might you want to know about **the publisher** of the story (that is, the magazine or website where the story appears)?

*Is the organization journalistic or is it an advocacy organization? What is the organization's reputation? What other kind of material do they publish? And so on.*

3. Why is the **date** of the article important?

*An old date or no date could indicate that the information is outdated, especially in science where new data are coming in.*



4. What clues to trustworthiness can you find in the way the author **structures and connects information**?

*If students don't have any initial ideas, ask them to think about the logical flow of the argument, whether there is consistency across the story and whether key claims are supported. Encourage students to think about unanswered questions. What is left out of a story can sometimes matter as much as what is put in.*

5. Can you find any clues to trustworthiness in the **tone and style** of writing?

*A formal versus conversational tone is not always a clue to trustworthiness, but language that is overhyped, unnecessarily vague or ignores nuance could be a red flag.*

6. Are there clues to trustworthiness in the **sources cited**?

*Students should consider whether the news story relies on primary sources and whether the author seeks out multiple sources of expertise.*

7. How does **existing knowledge** shape your perception of a story's accuracy? What about information you read elsewhere on the same topic?

*Remind students that just because a story challenges existing knowledge does not mean it is false. And just because information is repeated in multiple places doesn't mean it is true; many stories may all be relying on the same incorrect source. Still, our own knowledge — if we are aware of its limits and our own biases — can be a good tool for evaluating new knowledge.*

8. How might clues to trustworthiness vary depending on the form of media — a text article, video or audio report, for example, or even a tweet? What additional factors might you consider depending on the type of media?

*Students might mention that a text article can easily link to primary sources, whereas that is harder in audio or video reports. For video reports, students might pay attention to how images are used to convey ideas (is it generic art, illustrations, photographs from the scene?). And sound effects might be an important consideration in audio reports. Tweets by their very nature are short and contain less detail but might link to original sources.*

**Activity Guide for Teachers: News You Can Trust?**

**Purpose:** Students will develop their critical thinking skills by evaluating and rating the trustworthiness of an article and will practice presentation skills by sharing the information with the class. By evaluating articles from a variety of news outlets, a class can begin to build a library of trustworthy news sources.

**Procedural overview:** Each student group will read an article about measles from a different news outlet and evaluate the article to try to determine its trustworthiness. Then groups will rate the article on a scale of 1 to 5 (1 being least trustworthy and 5 most trustworthy) and present the findings to the class. As an optional extension, students can compare their articles to the *Science News* article "[Measles erases immune memory](#)." The [comprehension section of this guide](#) asks questions that offer clues for evaluating the trustworthiness of that article.

**Note to teachers:** You can apply this activity to any topic beyond measles.

**Approximate class time:** 1 class period.

**Supplies:**

News You Can Trust? student worksheet

Computers with internet access or printed articles from various news outlets\*

\*Teachers supplying printed articles should consider a range of news outlets while being careful not to encourage the spread of misinformation.

Poster board and markers or other supplies depending on the presentation type desired

**Directions for teachers:**

Divide your class into groups of three to four students and instruct each group to find and read a news article about measles (or another topic). You should encourage groups to find articles from various news outlets (or supply groups with printed articles from various news outlets). Tell students to use the following prompts to determine whether they think the article they have read is trustworthy or not. After evaluating the article, they will present their trustworthiness assessments to the class and answer additional questions. Question 16 asks students to compare their article to the *Science News* article "[Measles erases immune memory](#)," which is highlighted in this guide's comprehension questions.

**Directions for students:**

Find and read an online news article about measles (or read the printed article supplied by your teacher). Answer Questions 1 through 12 and then present your findings to the class using materials provided by your teacher. After all student presentations, answer Questions 13 through 15 (and 16 if your teacher assigns it).

1. What is the main point of the article?

2. What information is provided to support that main point? List at least three specific facts.
3. What can you find out about the author of the article?
4. What organization published the article? What can you find out about that organization?
5. What is the purpose of the article? Do you think the author or organization has an agenda? If yes, what makes you think so?
6. When was the article published? What does that reveal about the quality of the information?
7. Does the article appear to draw on primary sources? If so, how do they support the main point?
8. Does the article raise unanswered questions? If so, what?
9. Is there anything in the article that you'd like to verify elsewhere? If so, what?
10. Are there any red flags that make you skeptical of the article or its author? If so, what are they?
11. How does the information in the article compare and contrast with other information you know or have read?
12. On a scale of 1 to 5 (1 being least trustworthy and 5 most trustworthy), how trustworthy do you think your article is? Why? Give at least two reasons for your rating.

13. How did the trustworthiness rating for the article you read compare with the ratings other groups assigned their articles?

14. What factors did the other groups weigh most heavily in determining trustworthiness? Were these factors similarly important to your group's rating?

15. List the steps that you will take in the future when trying to determine whether an article is trustworthy. How will you change your approach to evaluating general news? What about science news?

16. Read the *Science News* article "[Measles erases immune memory](#)" and answer the comprehension questions provided (or review the answers if you've already done so). Based on those answers, how trustworthy do you think the *Science News* article is? How does the article compare with articles about measles from other news outlets that your class has read for this activity?

## Student Activity Guide: News You Can Trust?

**Directions:** Find and read an online news article about measles (or read the printed article supplied by your teacher). Answer Questions 1 through 12 and then present your findings to the class using materials provided by your teacher. After all student presentations, answer Questions 13 through 15 (and 16 if your teacher assigns it).

1. What is the main point of the article?
  
  
  
  
  
  
  
  
  
  
2. What information is provided to support that main point? List at least three specific facts.
  
  
  
  
  
  
  
  
  
  
3. What can you find out about the author of the article?
  
  
  
  
  
  
  
  
  
  
4. What organization published the article? What can you find out about that organization?
  
  
  
  
  
  
  
  
  
  
5. What is the purpose of the article? Do you think the author or organization has an agenda? If yes, what makes you think so?
  
  
  
  
  
  
  
  
  
  
6. When was the article published? What does that reveal about the quality of the information?
  
  
  
  
  
  
  
  
  
  
7. Does the article appear to draw on primary sources? If so, how do they support the main point?
  
  
  
  
  
  
  
  
  
  
8. Does the article raise unanswered questions? If so, what?
  
  
  
  
  
  
  
  
  
  
9. Is there anything in the article that you'd like to verify elsewhere? If so, what?

10. Are there any red flags that make you skeptical of the article or its author? If so, what are they?

11. How does the information in the article compare and contrast with other information you know or have read?

12. On a scale of 1 to 5 (1 being least trustworthy and 5 most trustworthy), how trustworthy do you think your article is? Why? Give at least two reasons for your rating.

13. How did the trustworthiness rating for the article you read compare with the ratings other groups assigned their articles?

14. What factors did the other groups weigh most heavily in determining trustworthiness? Were these factors similarly important to your group's rating?

15. List the steps that you will take in the future when trying to determine whether an article is trustworthy. How will you change your approach to evaluating general news? What about science news?

16. Read the *Science News* article "[Measles erases immune memory](#)" and answer the comprehension questions provided (or review the answers if you've already done so). Based on those answers, how trustworthy do you think the *Science News* article is? How does the article compare with articles about measles from other news outlets that your class has read for this activity?

## Related Articles

### *Science News:*

[“People are bad at spotting fake news. Can computer programs do better?”](#) Readability: 12.4

[“On Twitter, the lure of fake news is stronger than the truth,”](#) Readability: 12.5

### *Science News for Students:*

[“Teen fights fake news, one newsfeed at a time,”](#) Readability: 6.4

[“Fact checking: How to think like a journalist,”](#) Readability: 7.0