

Writing about Science: Crafting an Op-Ed

Objectives:

- Read a published op-ed about a scientific topic.
- Learn how to structure an op-ed about a scientific topic.
- Understand the importance of credibility and evidence in persuasive writing.
- Practice critical thinking by considering different perspectives and addressing counter arguments.

Instructions:

Introduction

Engage with Relevance: Start by asking the class a question that relates to their lives or current events, such as:

- "Have you seen news articles or opinion pieces discussing scientific topics like climate change or the COVID-19 pandemic?"

Explain the Focus: This lesson will focus on a specific type of writing called an op-ed (an "opinion editorial"), which is a way for individuals to express their opinions on important topics, including science. Op-eds are often published in newspapers and magazines, or on online platforms.

Outline the objectives (above) for the lesson.

Part I: Read and discuss an op-ed about a scientific topic

Read the free, open-access article in The Guardian - The world has a chance to end plastic pollution – the petrochemical giants mustn't spoil it - by Steve Fletcher.

<https://www.theguardian.com/commentisfree/2024/apr/29/world-plastic-pollution-petrochemical-giants-un-treaty-2015-paris-lobbyists>

As a class, discuss the op-ed by asking students the following questions:

✓ 1. **Do you think the author was effective at getting his readers to trust him?**

- What makes him more of an authority on the topic of plastics compared to the general public?

Suggested Answer: Being a professor of ocean policy and economy at the University of Portsmouth and the editor-in-chief of Cambridge Prisms: Plastics gives him credibility and expertise in the field. This background would likely lead readers to trust his insights and opinions more than those of the general public.

✓ 2. How did the author back up his point?

- What evidence did he provide, which even those individuals who may disagree with his opinion, will interpret as credible?

Suggested Answer: Fletcher backs up his points with a combination of scientific evidence and logical reasoning. He references a recent scientific paper advocating for a reduction in virgin plastic production as the most effective way to tackle plastic pollution. Additionally, he highlights the complex nature of the plastics economy and the need for a range of supporting interventions alongside production cuts. These arguments are supported by facts and reasoning, making them credible even to individuals who may initially disagree with his perspective.

✓ 3. What's new about what the author is sharing?

- Is there any new information for the public?

Suggested Answer: The author presents several new aspects regarding the approach to tackling plastic pollution. He emphasizes the need to address plastic pollution at its source by reducing virgin plastic production, rather than solely focusing on end-of-life waste management techniques. This approach shifts the focus to preventing pollution before it occurs, which may be a novel concept for some readers. Additionally, Fletcher discusses the lobbying power of the global plastics industry as a major impediment to implementing production cuts, shedding light on the political and economic challenges involved in addressing plastic pollution.

✓ 4. Why should the author's readers care?

- How does the topic of plastic pollution impact the author's readers in their daily lives? How are the author's ideas helpful for his audience?

Suggested Answer: Plastic pollution impacts the author's readers in various ways, ranging from environmental concerns to public health issues. Fletcher argues that plastic pollution contributes to the climate crisis, biodiversity loss, and chronic pollution, with harmful effects on human health. By providing solutions to tackle plastic pollution at its source, such as reducing virgin plastic production and implementing policies to promote reusable products, Fletcher offers actionable ideas for his audience to address these pressing issues. Therefore, readers should care about the topic as it directly affects their daily lives and the health of the planet.

✓ 5. Is the author's language effective for all his readers, regardless of their opinion?

- Does his choice of language utilize empathy and respect in pursuit of reaching all readers, giving them a better chance at changing minds?

Suggested Answer: Fletcher’s language is likely effective for most readers, regardless of their opinion on the topic. He uses a combination of factual information, logical reasoning, and persuasive language to make his case. While he acknowledges the benefits of plastic in certain contexts, such as medical and food uses, he also emphasizes the negative impacts of plastic pollution on people and the planet. Overall, his language appears to be respectful and empathetic, aiming to engage readers in a constructive dialogue rather than alienate them.

Part II: Class Brainstorming

As a class, brainstorm drinking water related topics that are relevant to the public. Write a list on the board. Alternatively, you can also do this activity with any scientific concept you have learned about this year.

Part III: Student Worksheet

Have students complete the associated worksheet (next page) individually or in small groups.

Part IV: Presentations & Feedback

After students have completed the worksheet and their op-ed, they will present it to the class.

Before anyone shares their op-ed, distribute the “Feedback Sheet for Students” (the final page of this lesson plan) and give the class time to read it. Then, allow time after each op-ed for the class to give feedback.

Student Worksheet: Writing Your Own Op-ed

Directions:

1. Pick a TOPIC: Using the class-generated list, choose a topic for your op-ed.

2. STRUCTURE your op-ed: Begin writing your op-ed by filling in its structure using the template below.

Hook your audience: Write the beginning of your op-ed and focus on creating a “hook” for your audience—grab your reader’s attention. Be bold, authentic, and accurate. Consider telling a relevant story (keep it brief) or citing a new study.

Thesis: What is your core argument? Make it clear and concise, aiming for 1-2 sentences.

Argument:

1. First Point:

- a. Evidence
- b. Conclusion

2. Second Point:

- a. Evidence
- b. Conclusion

3. Third Point:

- a. Evidence
- b. Conclusion

Acknowledge Gaps & The Other Side: Address any flaws in your position, as well as any apparent counter arguments.

Conclusion: Reiterate your thesis in an impactful way that your audience will remember.

3. STRENGTHEN your op-ed: Answer the following questions. Based on your answers, add relevant sentences to your op-ed that will make your argument more robust.

Why should the readers trust you?

What makes you more of an authority on the topic you are writing about compared to the general public (your readers)?

Can you back up what you say?

What evidence can you provide, which even those individuals who may disagree with your opinion, will interpret as credible?

What's new about what you are sharing?

Is there something novel in what you are writing about? Is there new information for the public?

Why should your readers care?

How does your topic impact your readers in their daily lives? How are your ideas helpful for your audience?

Is your language effective for all your readers, regardless of their opinion?

Does your choice of language utilize empathy and respect in pursuit of reaching all readers, giving you a better chance at changing minds?

4. COMPLETE your op-ed: Finalize your op-ed, aiming to make it -

- Clear
- Concise
- Organized
- Impactful
- Convincing



Reference: <https://www.theopedproject.org/resources>

Feedback Sheet for Students

Instructions: Before you and your classmates present your op-eds, read the following. You will use these questions to help give your classmates constructive feedback about their op-ed.

- ✓ **1. Clarity and Coherence:**
 - Was the main argument clearly stated and easy to understand?
 - Did the op-ed flow logically from one point to the next?
 - Were the ideas well-organized and connected?

- ✓ **2. Use of Evidence:**
 - Did the presenter provide sufficient evidence to support their argument?
 - Were the sources credible and relevant?
 - Did the evidence effectively strengthen the argument?

- ✓ **3. Engagement and Persuasiveness:**
 - Did the presenter effectively engage the audience and maintain their interest?
 - Were persuasive techniques, such as storytelling or compelling language, used effectively?
 - Did the presenter anticipate and address potential counterarguments?

- ✓ **4. Language and Style:**
 - Was the language clear, concise, and appropriate for the intended audience?
 - Did the presenter use vocabulary and terminology accurately and effectively?
 - Was the tone appropriate for an op-ed (e.g., persuasive but respectful)?

- ✓ **5. Overall Impact:**
 - What was the most compelling aspect of the op-ed presentation?
 - What could be improved to make the presentation more effective?
 - Did the op-ed leave a lasting impression or inspire further thought?