8-28-2023

Behind the Headlines: Strategies for Critical Consumption of Science News

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IDEAS THAT MATTER

2023-2024 Myth & Science

Lesson: Behind the Headlines

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Learning Outcomes

Students will:

- Understand the paths information takes from the lab bench or the field to news headlines
- Reflect upon how misinformation and disinformation impact society, including from social justice and equity perspectives
- Develop individual strategies for critical media consumption
- Practice productive communication about science news, integrating perspectives from multiple disciplines

Annotated Bibliography

West, J.D. & C.T. Bergstrom (2021). Misinformation in and about science. *Proceedings of the National Academy of Sciences.* 118(15), e1912444117.

This powerful paper highlights the misinformation crisis and its implications. The authors specifically discuss misinformation in the context of science, aligning well with the learning objectives of this activity. Sensational headlines and the pitfalls of 'click-bait' are addressed. Importantly, this study also discusses the influence of search algorithms and headlines on publication bias, which invites important reflection on both the current challenges of misinformation and how these issues may continue to evolve and impact society. Students would also have the opportunity to reflect on the importance of responsibly citing scientific work. The paper further provides a primer for discussion of predatory publishing and publication ethics, which are important for audiences across fields. The paper concludes with important

recommendations for the future that students can further build on.

Naffi, N., A.-L. Davidson, H. Jawhar (2020). 5 ways to help stop the 'infodemic,' the increasing misinformation about coronavirus. *The Conversation*.

This resource provides a perspective from the height of pandemic uncertainty in March 2020 about the challenges of misinformation. The short reading provides five succinct and actionable ways to combat misinformation and promote critical media literacy. The reading provides a broad context of the issue, but also gives specific strategies that individual social media users can bring to their own approaches to receiving and sharing information. While an older source for how much this conversation has evolved, the piece reminds readers of the urgency and uncertainty of the time and will invite reflection upon how our own experiences with misinformation changed over the course of the pandemic. This could also invite discussion of science as an iterative, growing process, where new information changes understanding over time. Instructors should cautiously frame this piece in its specific time as 2020 and should open discussion for how this conversation has changed. https://theconversation.com/5-ways-to-help-stop-the-infodemic-the-increasing-misinformation-about-coronavirus-137561

Chou, W.-Y., A. Gaysnysky, J.N. Capella (2020). Where we go from here: Health misinformation on social media. *AJPH Perspectives*. 110(53), S273-275.

This short study examines misinformation on social media from the context of health sciences, providing a concise look at the implications of this significant challenge. The paper includes the psychological and emotional foundation of misinformation spread, integrating across different disciplines and aligning with this program's learning objectives. The paper discusses an important challenge in communicating science, that misinformation can lead to mistrust and misunderstandings that cause some audiences to doubt even credible science due to conflicting information on social media. The paper can also open discussion about vulnerable identity groups and the inequitable distribution of impacts when it comes to scientific misinformation. Finally, the paper will help students continue to build their own critical media consumption strategies with specific recommendations and future considerations.

Osborne, J., D. Pimentel, B. Alberts, D. Allchin, S. Barzilai, C. Bergstrom, J. Coffey, B. Donovan, K. Kivinen, A. Kozyreva, S. Wineburg (2022). Science education in the age of misinformation. Stanford University, Stanford, CA.

This fifty-page report provides a contemporary and relevant overview of the challenges that misinformation brings to scientific education today and the ways that educators and students can proactively improve information literacy. The source provides four sections of information that detail 1) why students must develop critical media literacy, 2) the evidence that students are not yet successfully evaluating information, 3) the urgency of this challenge for scientists and educators, and 4) active solutions to promote digital media and information literacy. This thoughtful and thorough report provides an excellent resource for students and instructors, covering important topics from this lesson such as scientific consensus, peer review, and data uncertainty and will help learners to better understand the process of science. The piece also includes direct and specific recommendations and example assignments for deeper explorations of these important concepts.

Saini, A. (2019). Superior: The Return of Race Science. pp. 167-202. Beacon Press.

This book details the ways that systemic racism has manifested in science and continues to impact science communication and reporting. While the complete text is a valuable read, two chapters have been selected to accompany this lesson. These chapters detail specific stories of how data can be presented with racial biases that are not supported by the evidence, providing further context for the social justice implications of this discussion of misinformation. One chapter also highlights the racialized marketing of certain medicines based on unproven biological foundations as an important caution for critically evaluating sources of information. These sections can foster important and timely discussions about the ways that systemic oppression permeates science. Additional discussion time beyond this lesson is recommended to fully engage with this rich text.

Lecture Notes

- See the accompanying lecture slides.
- Introduction
    - The Scientific Publication Process
- Small Group Activity
    - Behind the Headlines
- Class Discussion

- Behind the Headlines

Integrative and Applied Learning Activity

In your groups...

1. Find a Scientific Headline
    - *Find a headline that comes from a peer-reviewed paper.*
    - *What does the headline say?*
    - *What is your reaction to the headline?*
2. Find the Scientific Source
    - *Where is the study from? Is this a pre-print or a peer-reviewed study? How do you know?*
3. Compare the News Article and the Scientific Study
    - *How does the abstract compare to the headline?*
    - *Do you agree with how your headline is presented? If not, how would you rewrite it?*

Assessment

In a thoughtful written reflection, discuss the concepts on scientific publication, the spread of information, and how you'll plan to evaluate news sources moving forward with someone who is not in our course.

Your answer should be based on our in-class discussion and at least one of the external readings. Consider how these concepts relate to social justice and equity as you reflect.

Please spend approximately two hours reflecting and writing to fully engage with this important topic and meet our learning objectives.