Two Sides of the Same Coin: Exploring Media, Rhetoric and Scientific Literacy

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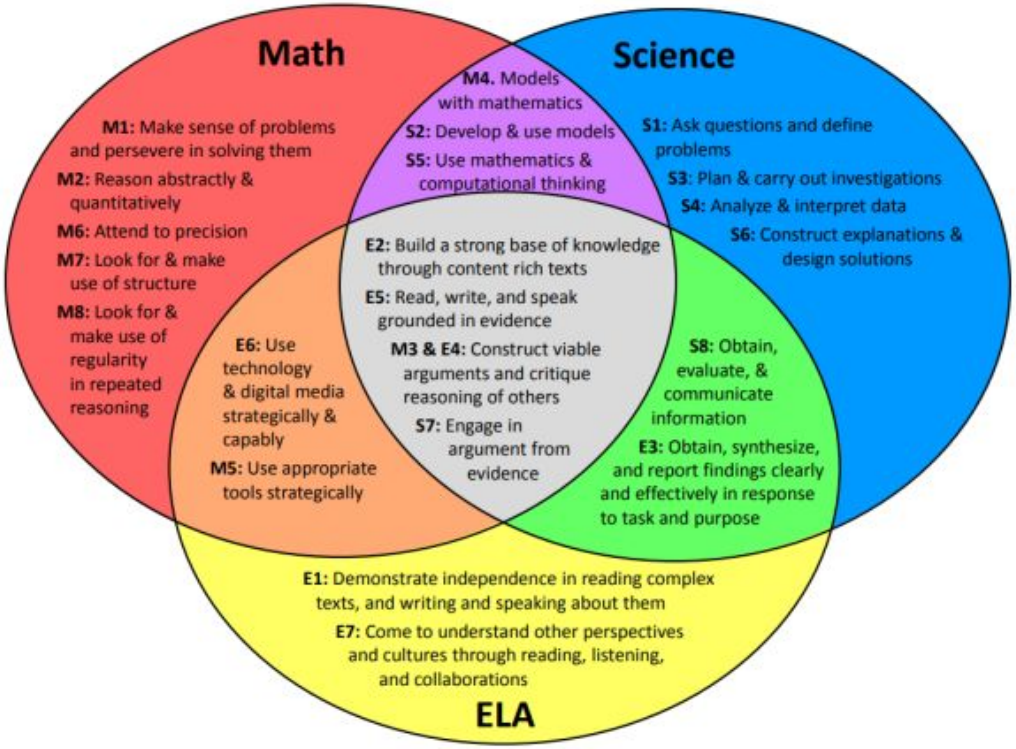


Relationships of disciplinary practices across the Massachusetts Curriculum Frameworks for English Language Arts and Literacy, Mathematics, and Science and Technology/Engineering (based on work by Tina Cheuk; ell.stanford.edu).

From the 2016 *Massachusetts Curriculum Framework for Science and Technology/Engineering*

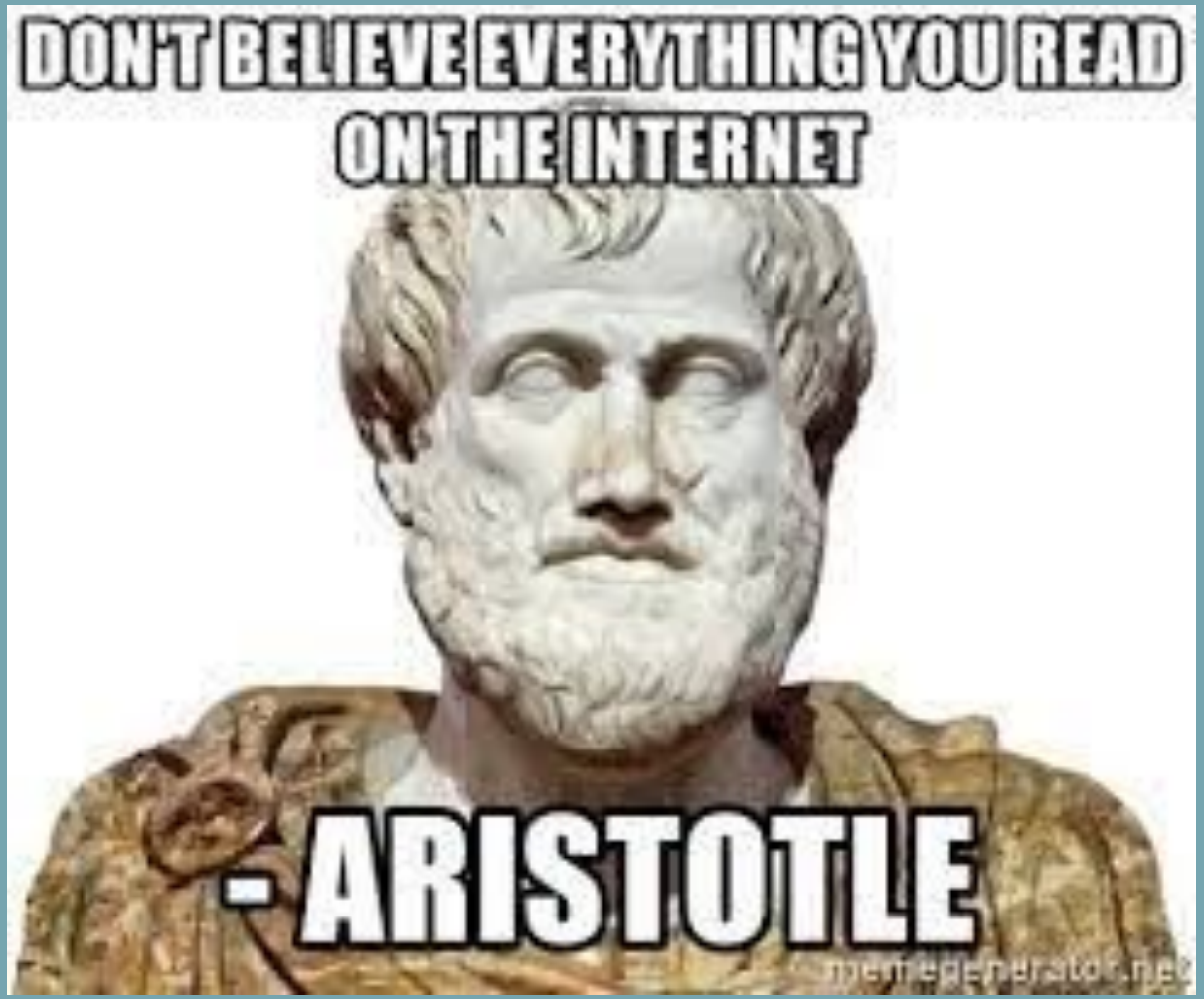
Science and Engineering Practices …

From the *Massachusetts Curriculum Framework for Science and Technology/Engineering*

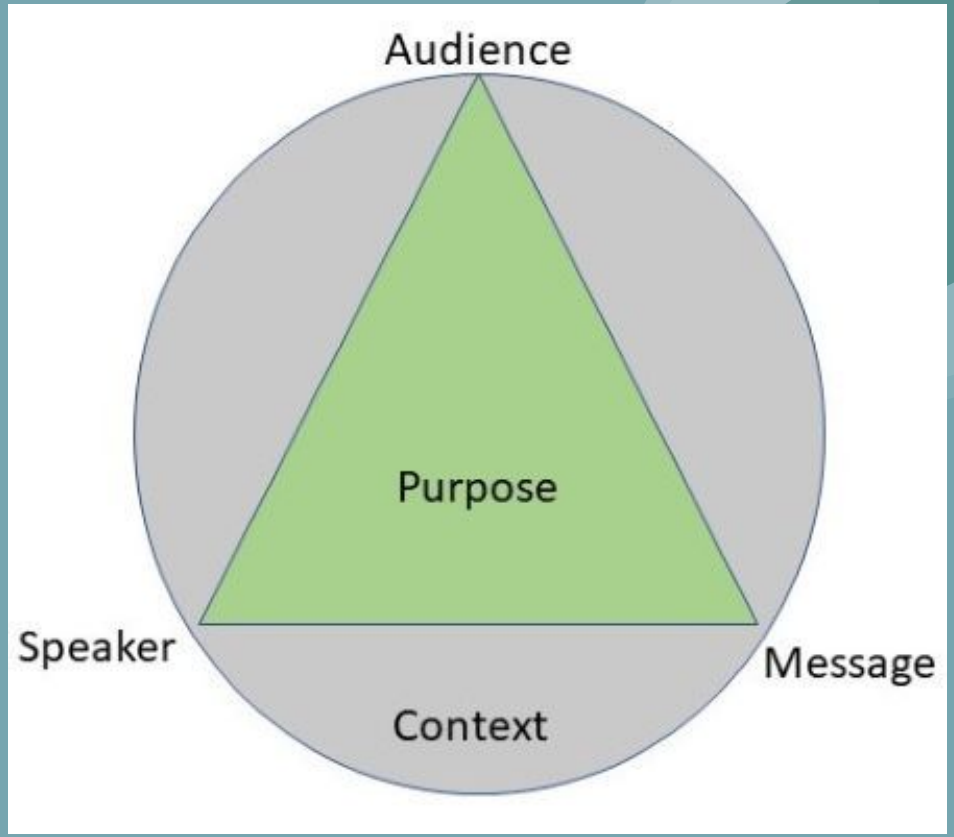
Practice 6. Constructing **Explanations** and Designing Solutions

Practice 7. Engaging in **Argument** from Evidence

Practice 8. Obtaining, Evaluating, and Communicating Information


DON'T BELIEVE EVERYTHING YOU READ
ON THE INTERNET
- ARISTOTLE

Aristotle’s Rhetorical Triangle



Authentic Writing Tasks

Create an assessment in which you give students a problem in science, ask them to find a solution, and give them both a purpose **and** an audience to explain their solution and process.

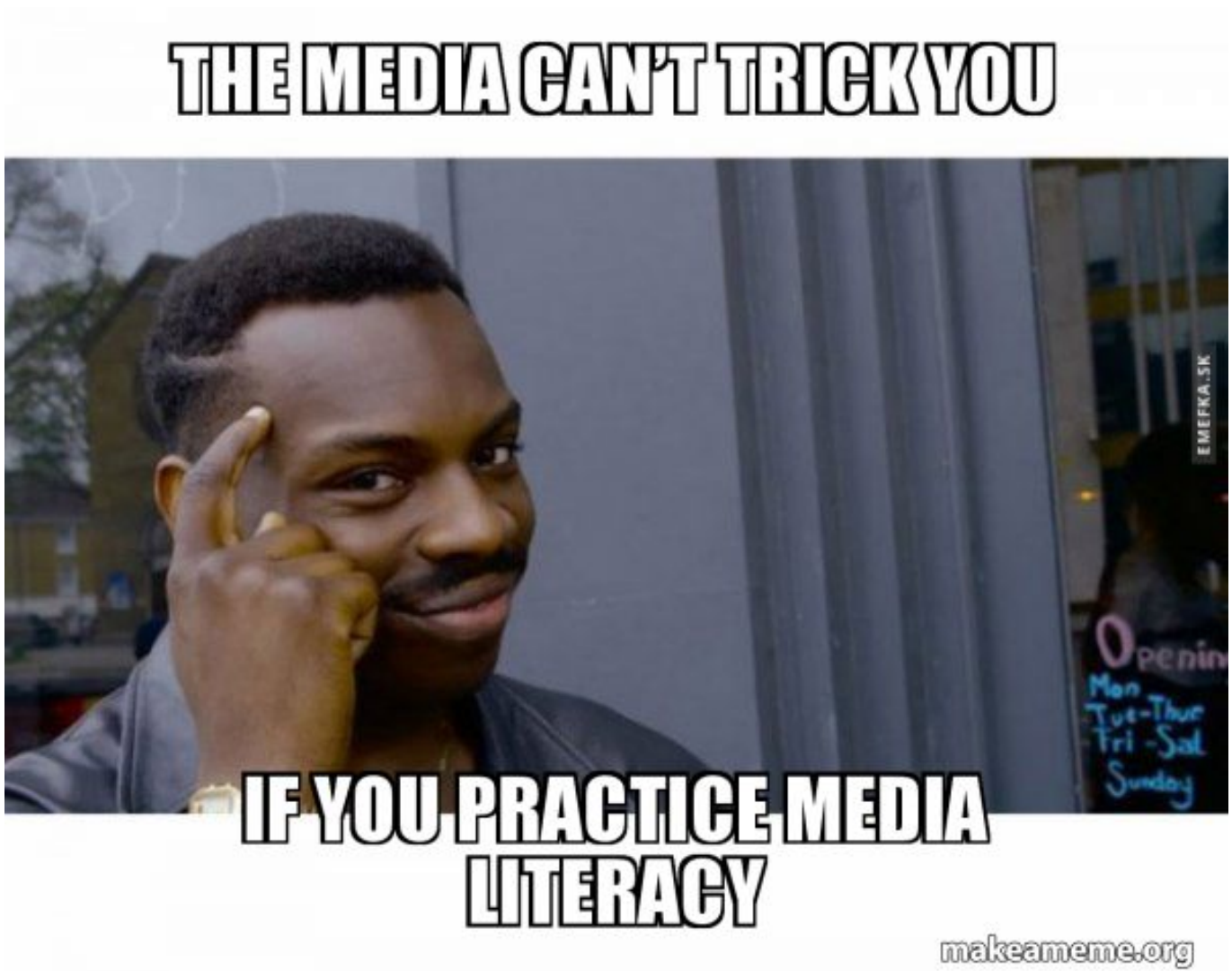
Emphasize the two main purposes for science writing:

1. To explain
2. To argue

Analyze Science Texts

Use the rhetorical triangle to identify purpose, message, audience, and speaker. Identify decisions made by the speaker to deliver the message, appeal to the audience, and accomplish their purpose. Critique arguments as needed.

Use this same approach for critiquing the media...


THE MEDIA CAN'T TRICK YOU
EMEFKA.SK
Openin
Mon
Tue-Thur
Fri -Sat
Sunday
IF YOU PRACTICE MEDIA LITERACY
makeameme.org

Discovering Purpose of Media

One of the most important Steps to start students on!

Get students to ask why this piece of media exists, what's its purpose?

1. To Sell
2. To Entertain
3. To Persuade
4. To Provoke
5. To Document
6. To Inform

Once the primary purpose has been discovered you can start to challenge students to start finding secondary purposes.

Sorting Media Purposes into Info Zones

Purpose: **Infozone:**

To Sell —> Advertising: Information that sells you a product or service.

To Entertain —> Entertainment: Information that amuses, pleases, relaxes or distracts you.

To Persuade —> Opinion: Information that persuades you, ideally through the use of fact-based evidence, to adopt a specific point of view about an issue or event.

To Provoke —> Propaganda: Information that provokes you — often by using false or distorted information to manipulate your emotions.

To Document —> Raw information: Information that documents an event or trend. It has not been analyzed, checked, edited, explained or placed in any context.

To Inform —> News: Information that informs you, through fair and impartial reporting, about local, national and international events, issues and people of significance or of interest.

Test our knowledge:

Follow the QR Code to take the infozone sorting challenge: This is a great way to check students understanding as well.

First Purpose, then can it be trusted

Once students are comfortable with discovering the purpose of a piece of media, then they can start asking the tough questions.

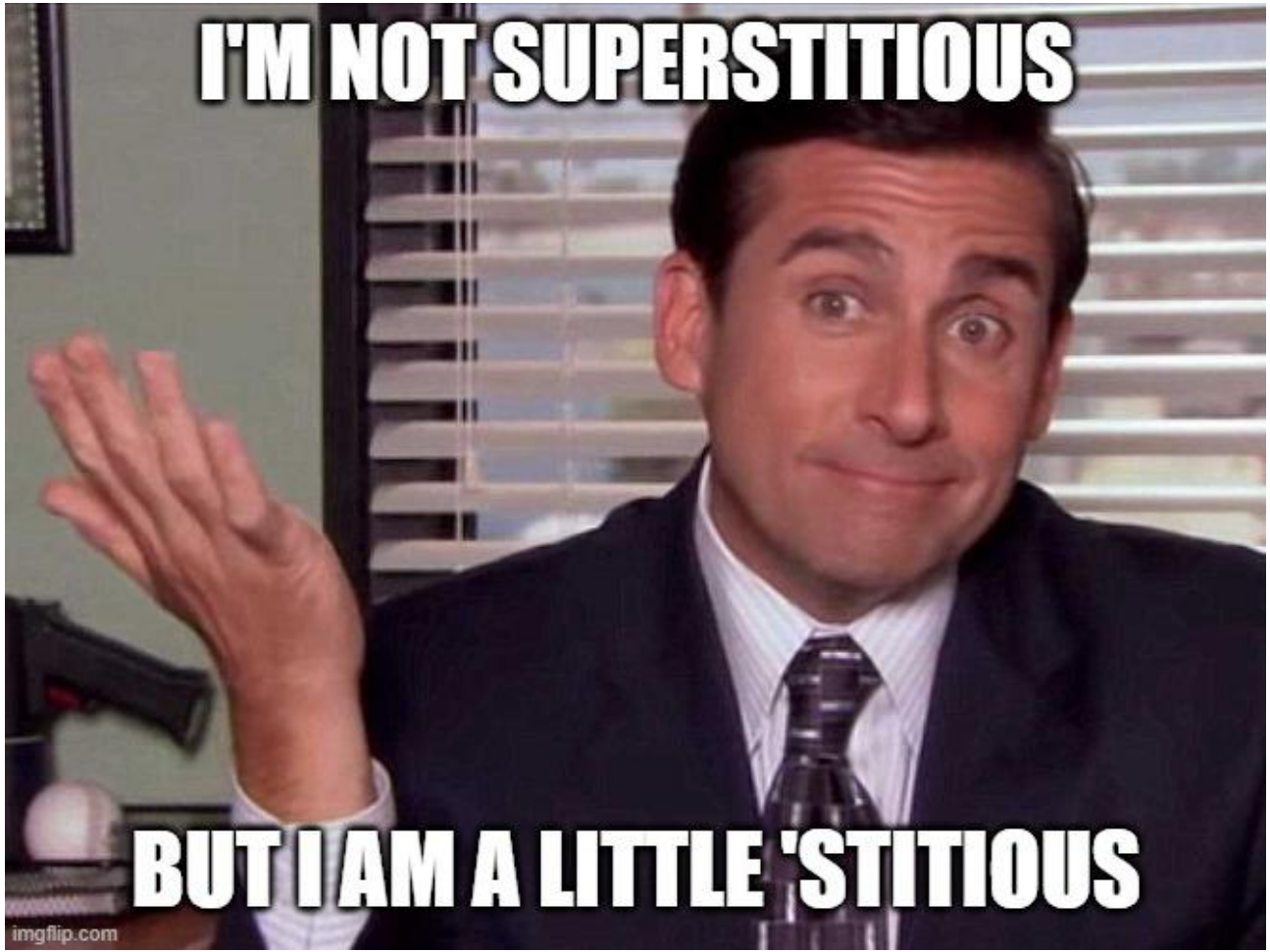
Can I trust this piece of media?

Are there any underlying or hidden purposes?

Does anyone benefit from this piece of media?

Is the information presented in a fair and non-objective manner?

Are all points of view equally being represented?



SCAN ME

Conspiratorial Thinking- What is it?

The following thinking moves are actually hallmarks of thinking within a conspiratorial framework:

1. **Motivated Reasoning**- actively searching for information in biased ways (often involving emotions), dismissing credible evidence and/or inconvenient facts
2. **Institutional Cynicism**- the belief that governments and/or corporations cannot ever be trusted
3. **Illusory Pattern Perception/Patternicity** - the tendency to perceive meaningful patterns between unrelated things/events

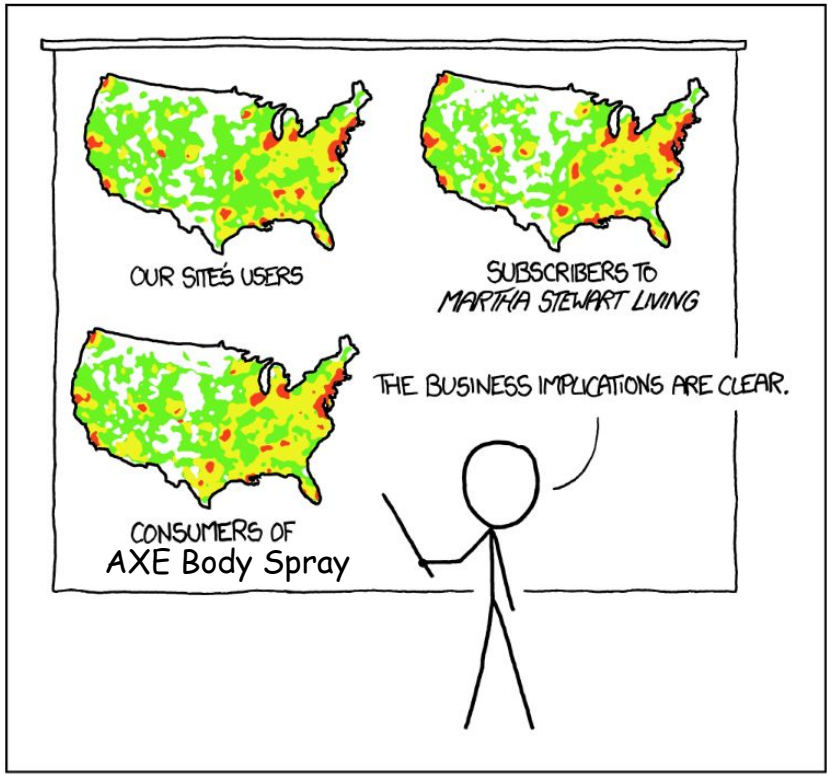
Conspiratorial Thinking Takes Advantage of Our Cognitive Weaknesses

The “recipe” for conspiratorial thinking can be thought of as including 3 parts bias and 1 part motivated reasoning:

1. **Confirmation Bias**- our natural tendency to accept and believe information that aligns with our beliefs or understandings AND to overlook information that does not fit within this framework.
2. **Intentionality Bias**- the belief that random events/disasters are really scary they must be caused by “something” and not be “random”
3. **Proportionality Bias**- the belief that big events are triggered by big causes

Combine the biases listed above with institutional cynicism and patternicity and a perfect storm coalesses to fuel a conspiracy theory.

HEAT MAP



PET PEEVE #208:
GEOGRAPHIC PROFILE MAPS WHICH ARE BASICALLY JUST POPULATION MAPS

Edited for Presentation
https://xkcd.com/1138

Let's Take a Closer Look: COVID-19 and the 5G Conspiracy

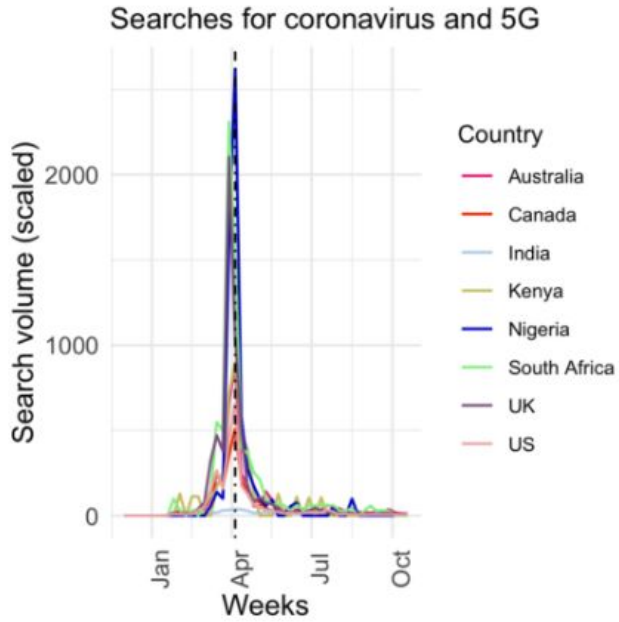
- With a focus COVID-19 myths the WHO "busted", researchers at Boston University used epidemiological techniques for modeling disease transmission to track the spread of COVID-19 misinformation.
- What they found was that misinformation spreads exponentially, in the same way that the virus itself was spreading!

https://prezi.com/view/mrouoBPZxkt01ljF2zfp/

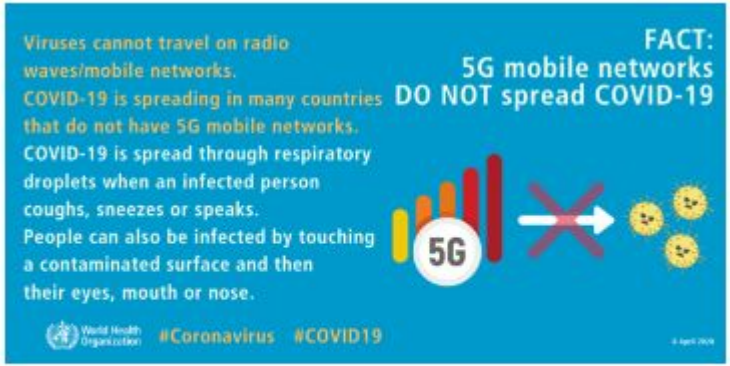
Conspiracy Theories Spread Quickly Across Countries

- Tracking eight English speaking countries (Australia, Canada, India, Kenya, Nigeria, South Africa, UK, US) search volume for COVID-19 and 5G increased exponentially in April 2020 as people tried to make sense of what was happening.
- Many organizations including the WHO published “myth busting” infographics for the public.
- There are many “fact checking” deserts- the spread of misinformation and conspiracy theories is a GLOBAL PHENOMENON.

https://twitter.com/mygovindia/status/1248645463110062080



Trends in searches for "coronavirus and 5G" from December 2019 to October 2020, showing a spike for all included countries in April. The black vertical line in April indicates when the topic was listed as a myth on the WHO website (Nsoesie et al., 2020).



A downloadable infographic from the WHO "mythbusting" website explains why there is no relationship between 5G and COVID-19.

Retrieved from https://www.bu.edu/sph/news/articles/2021/5g-doesnt-cause-covid-19-but-myth-went-viral/

What Does It Take To Help Someone Break Free From a Conspiracy Theory?

It’s complicated...

- A scientist might say... correlation does not equal causation
- A person that believes the conspiracy theory will use often use counter evidence to support the conspiracy theory:
  - Hide something in plain sight- (the maps can easily be seen that COVID-19 and 5G overlap)
  - You must be a sympathizer and/or a perpetrator of the harm because you speak out against it
- It’s best to prevent students from thinking in conspiratorial ways

Social Media...By The Numbers

- According to my **high school students 96% of them get their news from social media**.
  - Of that number **53% only consume recommended news (algorithms)** and **48% do not independently verify information/news they consume**.
- According to researchers at Northeastern University, tweets containing false information are 70% more likely to be shared than tweets with truthful information.
  - Tweets with false information often appeal to our emotions (surprise, outrage) and contain new/novel information. Researchers think this may be why these types of posts get more sharing.

What Can We Do As Educators TODAY?

1. Acknowledge that conspiracy theories are no longer “fringe”- students are encountering them on social media.
2. Familiarize ourselves with the thinking patterns that drive conspiratorial thinking and CALL THEM OUT.
3. Work to help students truly deconstruct scientific data and recognize that not all interpretations of data are “valid”. (Spatial Analysis Fallacy Example)
4. Teach students not to discard data that doesn’t fit what they expect or want to see.
5. Teach students to think critically, like scientists. Model thinking that does not promote conspiratorial thinking.
6. Encourage students to call out conspiratorial thinking when they see it and NOT SHARE IT further on social media.

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