

## COVID & Credibility

What claims about COVID-19 should we believe? This requires a dual understanding, both of how science works and how science is conveyed in the media. Do we trust the people who present the evidence, or only the evidence itself? This presentation is a sample inquiry lesson, coupling the nature of science and science media literacy using the pandemic as a case study.

For further details and elaboration on the relevant concepts, see:

Allchin, D. (2020). The covid conundrum. *American Biology Teacher*, 82(Aug.), 429-433.

### *Preface for Teachers*

- [title]
- From NOS/scientific practices to **NOSIS** (test tubes to YouTube): “How do we know this? — With what certainty?”
- [epistemic] **trajectory of fact**, including competing imitators of science
- Conceptualizing science media literacy -- **3 domains**, epistemic principles different in each b/c not peer experts, with mutual accountability. Focus of this lesson is E, R, S.
- criteria: **student-centered, active, inquiry w/ explicit reflection, authentic**  
CASE: Assessments on -- old enough that most issues have been resolved; recent enough that students will remember how the uncertainty (and fear) felt

### *The Classroom Activity*

▣ = question to pose to students for discussion (individually, in pairs, in teams, or as a whole class, as the teacher chooses for each question)

- CASE: COVID-19 pandemic [**graph**, 11/11/20]
  - ▣ *Help label the axes? What does this graph convey?*
- [**Feb. 27 world map of covid cases**]
  - ▣ *Do you recall when you first heard about the coronavirus? What were your initial impressions?*
- Review student (and general public) preconceptions. [**bare shelves**]
- Our challenge: Which scientific claims should you have trusted? [**quizzical Homer Simpson**]
- First challenge: proposed preventative measures [**silver, aromatherapy, tea, elderberry, oregano oil**]
  - ▣ *Are any of these proposed preventions effective? How would you know?*
    - fraud [**fake sanitizers in India, Rwanda, Kenya; fraudulent sales**] halted by FDA
    - ▣ *How do you detect fraud?*
- **Trust** -- elicit preconceptions and background.
  - ▣ *Why--or when--do we trust others?*
  - ▣ *How does trust about reliable information differ from trust about moral guidance or personal loyalty?*
- How serious was the threat? — civic leader(s), news commentators [**Trump “under control” Jan 22; Bolsonaro, Brazil; Hannity Mar. 9, Ingraham Feb. 27**]
  - ▣ *From a historically situated perspective, how should you have assessed different claims? [Narrow discussion?: by assessing evidence, argument, or expertise?]*
- Analyzing trust: [**Trump/Fauci**] contrasting claims — one from a political leader, another

from the Director of the National Inst. of Allergy and Infectious Diseases

- ▣ *Who is qualified to know? What is expertise?*
- [WHO, CDC]
- ▣ *How do scientific institutions achieve their credibility?*
- March 24, 2020 -- Nobel Prize-winner Michael Levitt declares peak and predicts decline of cases in Italy, the U.S. and elsewhere. [Michael Levitt + graph]
- ▣ Were Levitt's claims credible? On what basis? [guiding discussion?: *What do we know of Levitt's expertise?*]
- [Italy & U.S. cases, 2020] Levitt's claims were wrong.
  - ▣ *Why was he not credible?* [guidance?: Help students research Levitt's field as modeling chemical reactions, not epidemics.]
- March 21, 2020--Rural doctor reports 100% cure with HCQ. President Trump calls it a "game changer." Dr. Fauci says the evidence is "anecdotal." [HCQ advocate; Trump & Fauci]
- ▣ *Miracle cure or tantalizing hype? What should be the basis for your belief -- reported evidence or expertise?*
- April 12, 2020 -- Publication of original study on HCQ questioned by fellow French scientists. [Didier Raulo, Match cover]
- ▣ *How would you learn about criticism in the scientific journals?*
- oversold false hope [HCQ, Brazil death]
- [Levitt, advocate, Raulo]
- ▣ Review: *We should we not have trusted these three "experts." Why not?*
  - [convening] Science depends on a *consensus* of *qualified* experts. [Opportunity for the teacher to further explain the significance of relevant expertise (qualified, well informed individuals) and on consensus vs. individuals (some are dissenters)]
- contested claims [vaccine "soon", Trump v. Fauci, CDC]
  - March 11, 2020 -- Trump: "We will have a vaccine very soon."
  - March 31, 2020 -- Fauci: Expect a "second wave" in the fall
  - April 3, 2020 -- CDC: Wear a mask in public.
  - ▣ *Thinking historically, what should have been the consumer's basis for the most trustworthy claims? Evidence, arguments, or expertise? Personal judgment or reliance on experts?*
- consequences of disregarding expertise
  - [students @ beach, Mardi Gras, pastor, covid critic; university campus]
- review [covid case graph, reprise]
  - ▣ *How would you try to persuade someone who did not view covid as a risk to respect the scientific expertise and consensus?*
  - [Opportunity to reinforce concepts of expertise (not argument or evidence) and of consensus.]

## Part II. Why Do Some People Reject Expertise?

- Jan. 22, 2020 -- Belgian doctor claims "5G is life-threatening, and no one knows it" — and it caused the covid pandemic in China [Belgian newspaper, anti-5G "death beamz" cartoon]
- [world maps, Mar. 3, 2020]
- [US maps, March 30, 2020]
- > Another retweet 3/14; reddit mid-March
- Other "evidence": online evidence for cancer from high voltage power lines (studies from the

late 1980s/early 1990s); online evidence for cell phones causing cancer, including an Italian Supreme Court ruling [**high-voltage tower, cell phones & cancer**]

- [**“We Believe in Science” placards**]
  - ▣ *Explain whether these maps, theories and supplemental evidence are sufficient for believing the 5G theory of covid.*
- [**maps, reprise**] Correlation is not causation
- [**tower, reprise**] Correlation evidence from 1990s was attributed to confounders. Earlier published studies were invalidated.
- [**cell phones, reprise**] Systematic studies, repeated many times, have failed to establish a relationship between cell phone radiation and any adverse health effect. Online information is hearsay only. Italian court decision was not decided by scientific experts.
- [**Woody Harrelson, Wiz Khalifa, John Cusack, M.I.A, David Icke**] Many celebrities have promoted the 5G theory.
  - ▣ *How should we regard their testimony?*  
[Opportunity to discuss significance of “role models” or celebrity status and what their successes and endorsements mean relative to student hopes, aspirations, beliefs.]
- [**networks**] False information can spread rapidly and widely through social media, unchecked. Recent study associated with use of social media with conspiracy theories on covid.  
Allington D, Duffy B, Wessely S, Dhavan N, Rubin J (2020). Health-protective behaviour, social media usage and conspiracy belief during the COVID-19 public health emergency. *Psychological Medicine* 1–7. <https://doi.org/10.1017/S003329172000224X>
- [**false consensus**] Communication within limited groups can create *false consensus effects*.
- [**vandalism**] 5G cell towers were widely vandalized in Europe.
- Many false theories circulated widely, believed by many. [**blame China, blame U.S., drink bleach, Eric-Trump**]  
U.S. blames China. China blames U.S. May 16 -- Eric Trump says virus is a hoax to impede his father's re-election. April 24 --Donald Trump suggests drinking bleach to help disinfect the body.
  - ▣ *How might you escape believing such false theories?*
  - ▣ *How would you argue to someone else who did believe them?*
- Reflection/Summary: “I just don’t know. Is it real or is it fake?” [**dilemma**]
  - ▣ *In reviewing the history of covid, what have you learned about how to decide which scientific claims are trustworthy, and which are not?*
  - ▣ *How might you apply these lessons to other cases?*

#### Extension

- A new scientific study promises that mouthwash will kill the coronavirus [**mouthwash**]  
<https://onlinelibrary.wiley.com/doi/10.1002/jmv.26514>
  - ▣ *Should you believe that this can keep you safe?*
  - ▣ *What further information would you like to find before deciding?*  
[Where possible, allow students to search the internet for helpful information?]