IMPROVING SCIENTIFIC LITERACY:
Best Practices for Communicating Scientific Information

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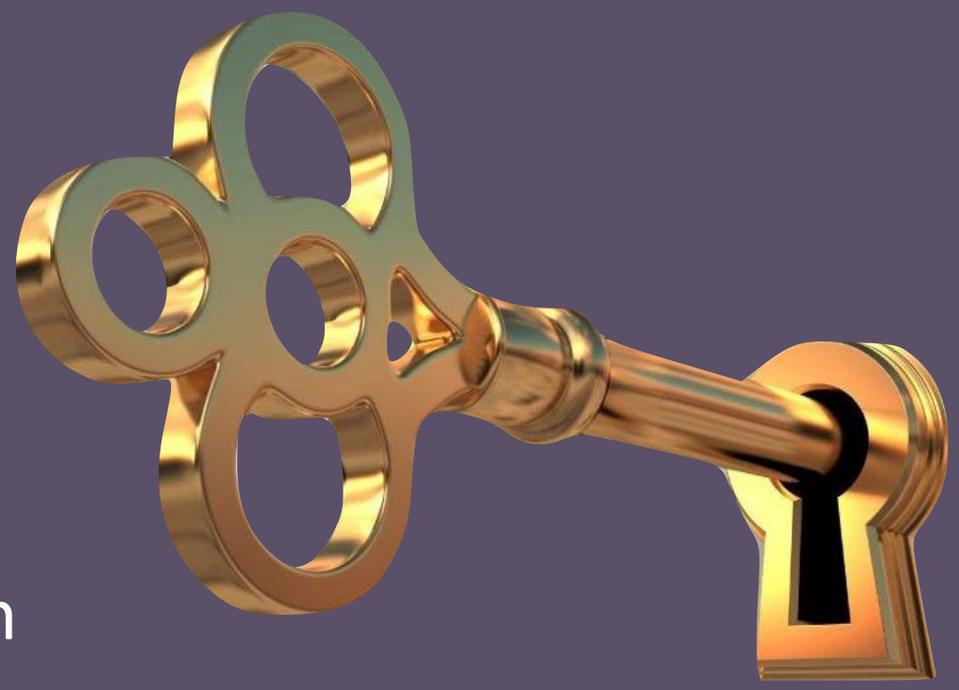
OVERVIEW

- Current state of civic scientific literacy
- Recent events affecting scientific literacy and communication
- Scientists as communicators
- Common communication challenges
- Best practices for effectively communicating scientific information and improving scientific literacy



CURRENT STATE OF CIVIC SCIENTIFIC LITERACY

- “Civic scientific literacy (CSL) refers to the ability of a citizen to find, make sense of, and use information about science or technology to engage in a public discussion of policy choices involving science or technology.”

(Miller, 2016)

CURRENT STATE OF CIVIC SCIENTIFIC LITERACY

- The Bad News
  - For the past 10 years, the amount of American adults who qualify as being scientifically literate has remained at about 28%.
- The Good News
  - The 2016 Michigan Survey of Scientific Literacy found that a little more than 50% of American adults have a high level of interest in new scientific discoveries and new inventions and technologies.
- The Bittersweet News
  - "Approximately 17% of American adults are attentive to science and technology policy issues, meaning that they have a continuing level of interest and tend to follow these issues in the news. This proportion has increased in recent years."

(Miller, 2016)

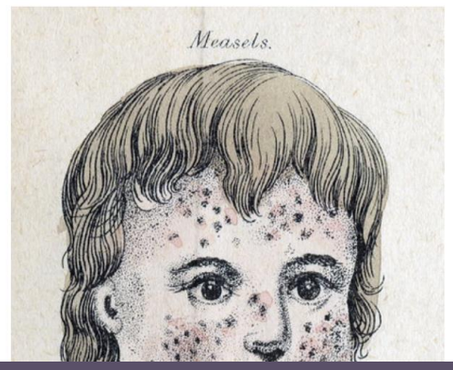
RECENT EVENTS

HOME SEARCH The New York Times

The Opinion Pages | OP-ED CONTRIBUTOR

How the Anti-Vaxxers Are Winning

By PETER J. HOTEZ FEB. 8, 2017



HOUSTON — It's looking as if 2017 could become the year when the anti-vaccination movement gains ascendancy in the United States and we begin to see a reversal of several decades in steady public health gains. The first blow will be measles outbreaks in America.

Measles is one of the most contagious and most lethal of all human diseases. A

News > Political News

Chair of House Science Committee Says the Journal 'Science' Is Not Objective

Chairman Lamar Smith dismissed commentary presented during testimony on climate change because it came from the journal Science — one of the oldest and most prestigious scientific publications in existence.

By Alex Kasprak Mar 29th, 2017

POLITICS 06/30/2017 03:47 pm ET

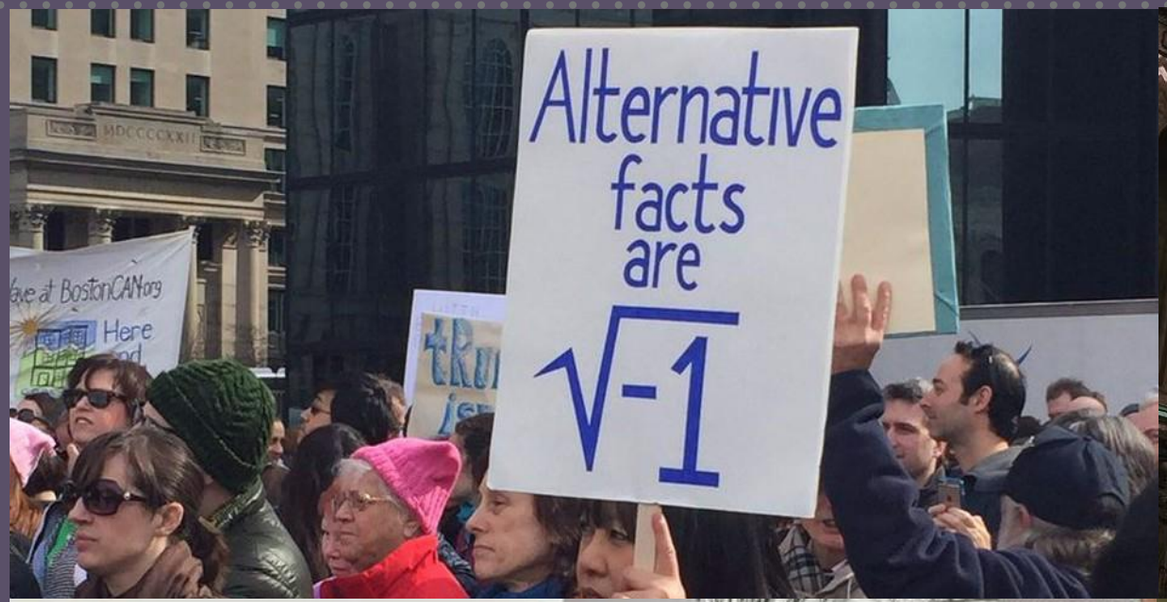
EPA Plans New Climate Science 'Critique,' Swapping Peer Review For Red Vs. Blue Politics

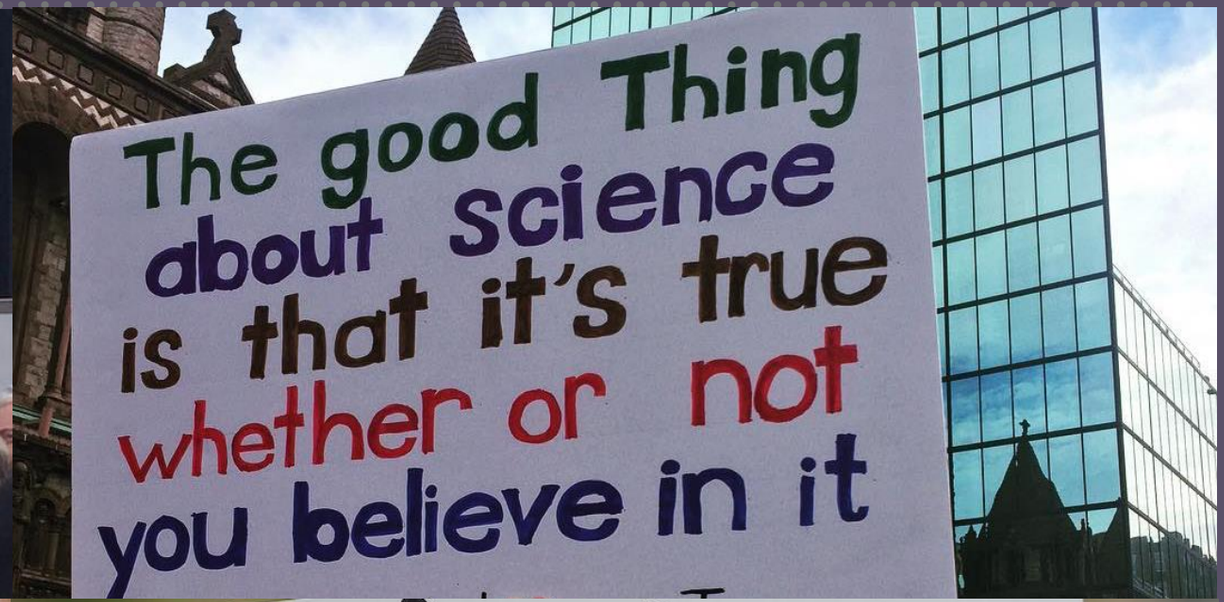
Scientists, former agency officials and House Democrats fear the new program opens the door to more industry pseudoscience.

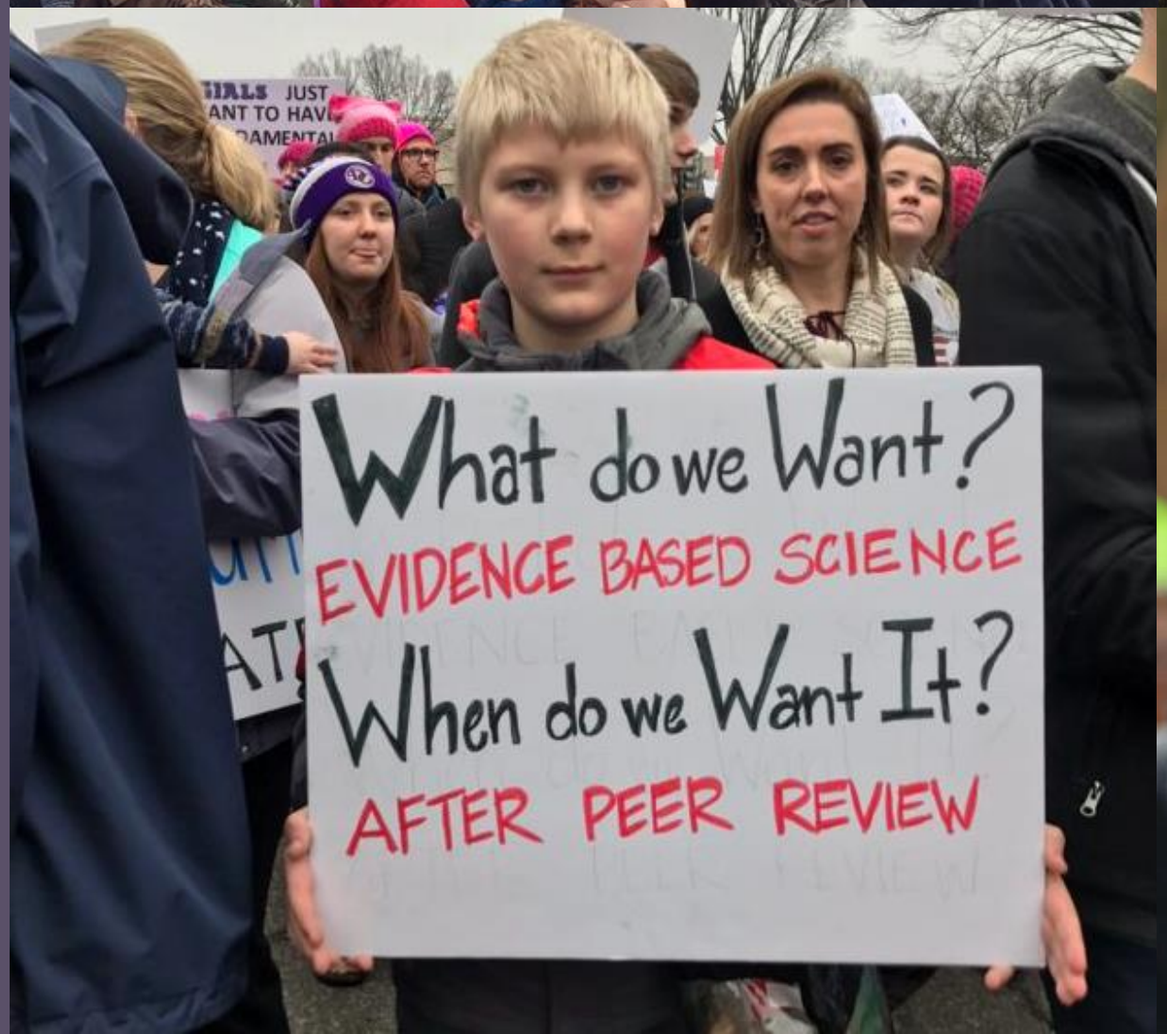
By Alexander C. Kaufman, Chris D'Angelo

(van der Linden, Leiserowitz, & Maibach, 2016)

RECENT EVENTS







RECENT EVENTS

- So what's driving it?
  - Lack of civic scientific literacy among Americans
  - The misguided idea that "balance" is necessary and demonstrates impartiality
  - Lack of access to credible scientific information / ease of access to pseudoscientific information
- Our increasingly short attention span

SCIENTISTS AS COMMUNICATORS

- Scientists are not typically known for their communication prowess
- The scientific process is widely misunderstood — and scientists aren't helping
- Scientists do not want to be involved in politics

COMMUNICATION CHALLENGES

- Communicating highly technical scientific information
  - Frequency of scientific jargon
  - Complexity of information
- Dependence on others to understand the science
  - Low levels of civic scientific literacy among public and varied levels of scientific knowledge in industry
  - Lack of means to get feedback to ensure information was actually understood

BEST PRACTICES

The Storyteller Approach

- Ask yourself:
  - Who does this information have the potential to affect?
  - What knowledge does my audience already have on this topic?
  - Where should this communication take place (communication channel) given the audience and type of information?
  - When is the most opportune time to share this information?
  - Why should my audience care about this information?
  - How can I produce understandable, easy-to-access information pieces?

BEST PRACTICES

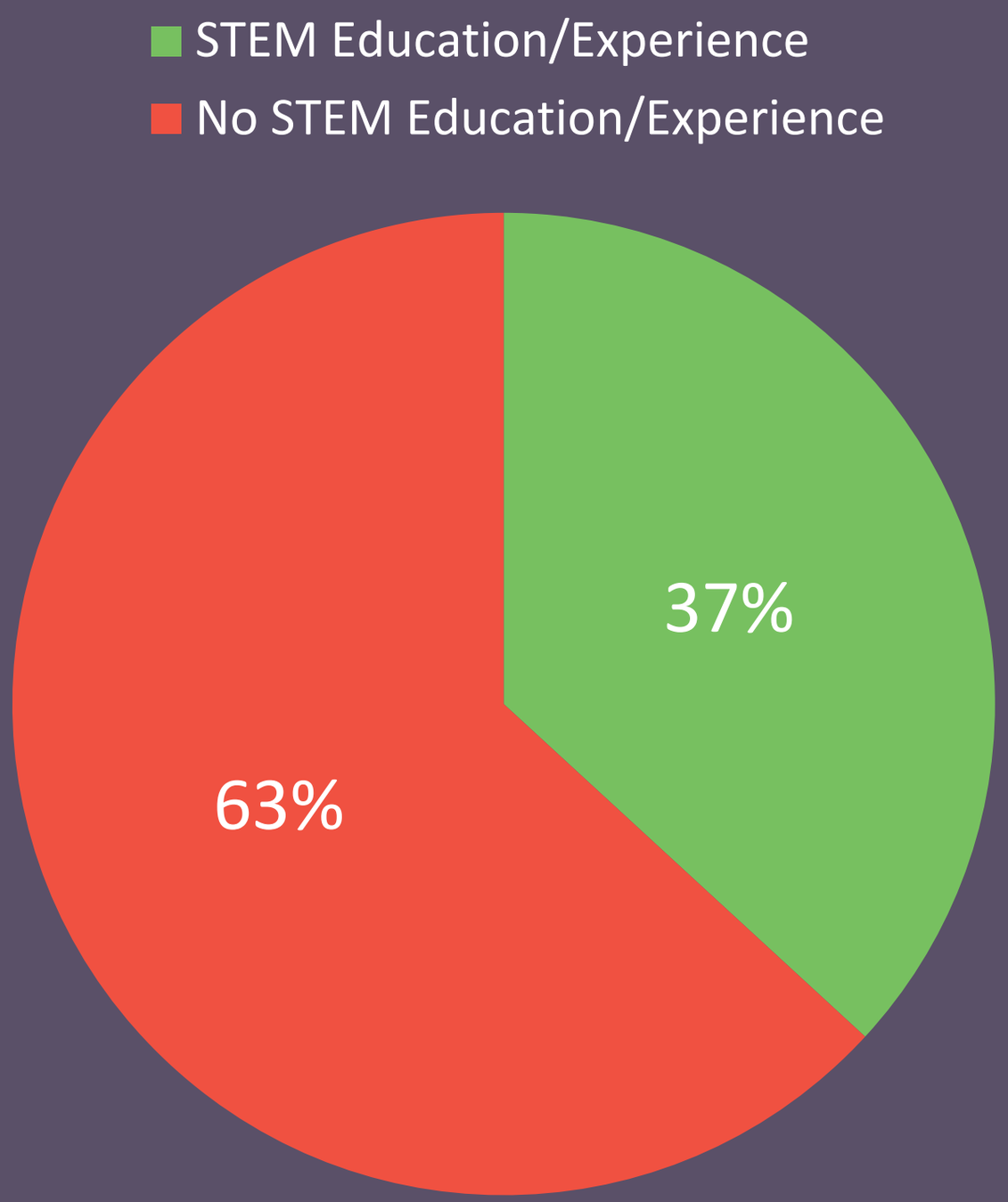
- Check your jargon
- Provide context and connection
- Teach don't tell
- Be an expert not an authority
- Improve your listening skills
- Master the art of brevity
- Let the picture do the talking
- Befriend the media
- Don't shy away from politics

EXAMPLE:
HOUSE COMMITTEE ON SCIENCE, SPACE, & TECHNOLOGY

- Of the members that serve on the U.S. House Committee on Science, Space, & Technology, only 37% have a STEM background
- A STEM background means they received a college degree in a STEM field and/or spent part of their career working a STEM job

COMMITTEE ON
SCIENCE, SPACE, & TECHNOLOGY
Lamar Smith, Chairman

HOUSE COMMITTEE ON SCIENCE, SPACE, & TECHNOLOGY



HOUSE COMMITTEE ON SCIENCE, SPACE, & TECHNOLOGY

No STEM Education or Experience

- Lamar Smith
- Frank Lucas
- Dana Rohrabacher
- Mo Brooks
- Randy Hultgren
- Randy Weber
- Steve Knight
- Barbara Comstock
- Gary Palmer
- Barry Loudermilk
- Darin LaHood
- Jim Banks
- Andy Biggs
- Clay Higgins
- Zoe Lofgren
- Suzanne Bonamici
- Elizabeth Esty
- Marc Veasey
- Donald Beyer
- Jacky Rosen
- Ed Perlmutter
- Mark Takano
- Colleen Hanabusa
- Charlie Crist

STEM Education or Experience

- Bill Posey
- Thomas Massie
- Jim Bridenstine
- Brian Babin
- Ralph Abraham
- Daniel Webster
- Roger Marshall
- Neal Dunn
- Eddie Bernice Johnson
- Dan Lipinski
- Ami Bera
- Jerry McNerney
- Paul Tonko
- Bill Foster

HOUSE COMMITTEE ON SCIENCE, SPACE, & TECHNOLOGY

SUMMARY

- This is an *interesting* time for science
- It is more important than ever that scientists become effective communicators
- The biggest challenges in our industry boil down to education
- Communication should always be strategic and never taken for granted
- Communication is a skill, and therefore requires understanding, practice, and improvement
- It’s up to us!