

Developing college students' fact-checking skills and algorithm awareness in COR100

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Why do we need to teach college students fact-checking skills and develop their algorithm awareness?



The New York Times

LinkedIn Ran Social Experiments on 20 Million Users Over Five Years

A study that looked back at those tests found that relatively weak social connections were more helpful in finding jobs than stronger social ties.

Give this article | 163



Researchers examined changes that LinkedIn had made to its "People You May Know" algorithm to test what sociologists call the "strength of weak ties." Sundry Photography/Alamy

REUTERS

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Technology

2 minute read · September 6, 2022 9:49 AM EDT · Last Updated 22 days ago

Social media firms to testify at U.S. Senate Homeland Security hearing

By David Shephardson



Let's say you want to search for pediatricians and come across these two sites:

Which of the following websites do you think is more trustworthy?

<https://acpeds.org/>

<https://www.aap.org/>



Investigating the source using Wikipedia

Let's look at American College of Pediatrician (ACP) Wikipedia



WIKIPEDIA
The Free Encyclopedia

Main page
Contents
Current events
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Learn to edit
Community portal
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Upload file

Tools
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Related changes
Special pages
Permanent link
Page information
Cite this page
Wikidata item

Print/export
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Article | Talk

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Search Wikipedia



American College of Pediatricians

From Wikipedia, the free encyclopedia

This article is about a socially conservative advocacy group. For the professional association of pediatricians, see [American Academy of Pediatrics](#).

The **American College of Pediatricians (ACPeds)** is a [socially conservative](#) advocacy group of [pediatricians](#) and other healthcare professionals in the United States.^[1] The group was founded in 2002. In 2005, it reportedly had between 150 and 200 members and one employee; in 2016, it reportedly had 500 physician members.^{[2][3]} The group's primary focus is advocating against abortion and the adoption of children by gay or lesbian people. It also advocates conversion therapy.^{[4][5]}

The organization's view on parenting differs from the position of the [American Academy of Pediatrics](#), which holds that sexuality has no connection with the ability to be a good parent and to raise healthy and well-adjusted children.^{[3][6][7]} ACPeds has been listed as a [hate group](#) by the [Southern Poverty Law Center](#) for pushing "anti-LGBTQ junk science".^[4] A number of mainstream researchers, including the director of the US National Institutes of Health, have accused ACPeds of misusing or mischaracterizing their work to advance ACPeds' political agenda.^{[8][9]}

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Founding and membership [edit]

The group was founded in 2002 by a group of pediatricians, including Joseph Zanga, a past president of the [American Academy of Pediatrics](#) (AAP), as a protest against the AAP's support for adoption by gay couples.^{[8][2]} ACPeds reports its membership at "over 500 physicians and other healthcare professionals".^{[10][3]}

American College of Pediatricians



Founded	2002; 20 years ago
Founders	Gerry Boccarossa and Joseph Zanga
Type	501(c)(3)
Tax ID no.	47-0886878
Location	Gainesville, Florida
Members	500 (estimated)
Revenue (2020)	\$127,841
Expenses (2020)	\$165,948
Website	www.acped.org

Investigating the source using Wikipedia

Let's look at American Academy of Pediatrics (AAP) Wikipedia page



WIKIPEDIA
The Free Encyclopedia

- Main page
- Contents
- Current events
- Random article
- About Wikipedia
- Contact us
- Donate

Contribute

Help

- Learn to edit
- Community portal
- Recent changes
- Upload file

Tools

- What links here
- Related changes
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- Permanent link
- Page information
- Cite this page
- Wikidata item

Print/export

Not logged in | Talk | Contributions | Create account | Log in

Article | Talk | Search Wikipedia

American Academy of Pediatrics

From Wikipedia, the free encyclopedia

Coordinates: 42°03′6″N 87°9′27″W﻿ / ﻿42.0366°N 87.9827°W﻿ / 42.0366; -87.9827

This article contains content that is written like an advertisement. Please help improve it by removing promotional content and inappropriate external links, and by adding encyclopedic content written from a neutral point of view. *(May 2020)* [\(Learn how and when to remove this template message\)](#)

The **American Academy of Pediatrics (AAP)** is an **American professional association of pediatricians**, headquartered in Itasca, Illinois. It maintains its Department of Federal Affairs office in Washington, D.C.^[1]

Contents [show]

Background

The Academy was founded in 1930 by 35 pediatricians to address pediatric healthcare standards.^[2] It has 67,000 members in primary care and sub-specialist areas.^[3] Qualified pediatricians can become fellows (FAAP).^[4]

The Academy runs continuing medical education (CME) programs for pediatricians and sub-specialists. The Academy is divided into 14 departments and 26 divisions that assist with carrying out its mission.^[5]

Publications

It has the largest pediatric publishing program in the world, with more than 300 titles for consumers and over 500 titles for physicians and other healthcare professionals. These publications include electronic products, professional references/textbooks, practice management publications, patient education materials, and parenting books.^[6]

The *AAP News* is the academy's official news magazine,^[7] and *Pediatrics* is its flagship journal.^[8]

The AAP issues a weekly report^[9] on COVID-19 cases in the United States. States began reporting COVID-19 cases on September 17, 2020. The AAP tracked 587,948 child COVID-19 cases, 5,016 child hospitalizations, and 420 child deaths.^[10]

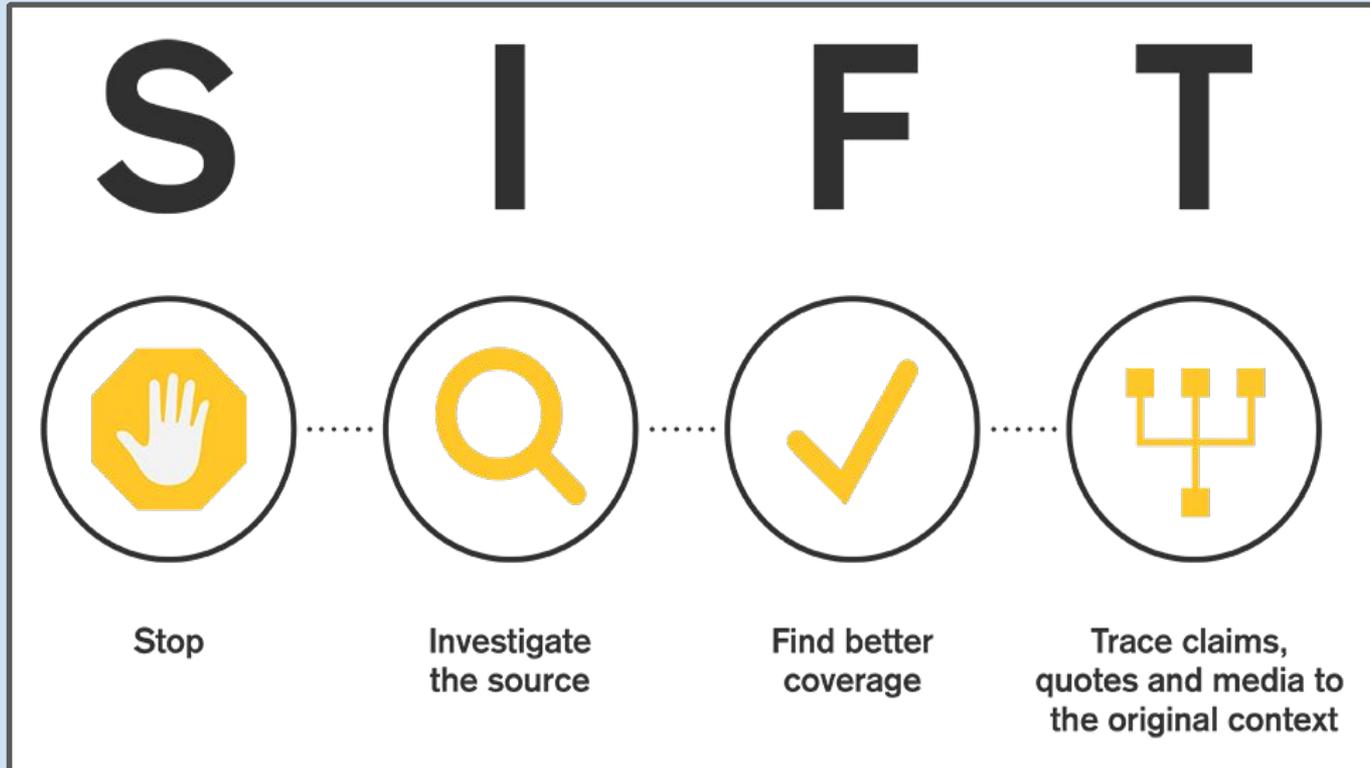
American Academy of Pediatrics



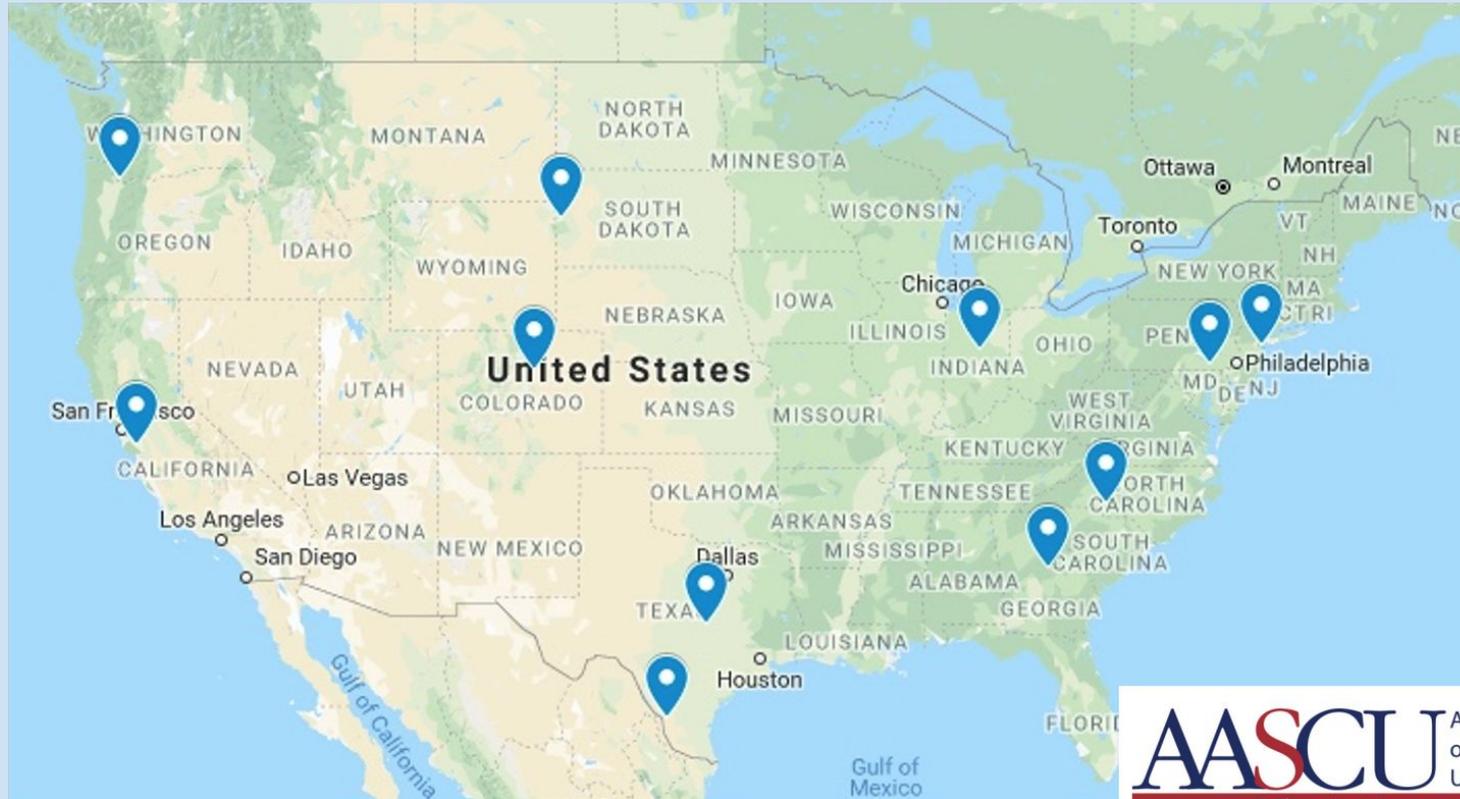
DEDICATED TO THE HEALTH OF ALL CHILDREN™

Formation	1930; 92 years ago
Type	Professional association
Headquarters	Itasca, Illinois, United States
Coordinates	42°03′6″N 87°9′27″W﻿ / ﻿42.0366°N 87.9827°W﻿ / 42.0366; -87.9827
Membership	67,000
Official language	English
AAP President	Lee Beers, MD, FAAP
Staff	390
Website	aap.org

Lateral Reading and the SIFT acronym



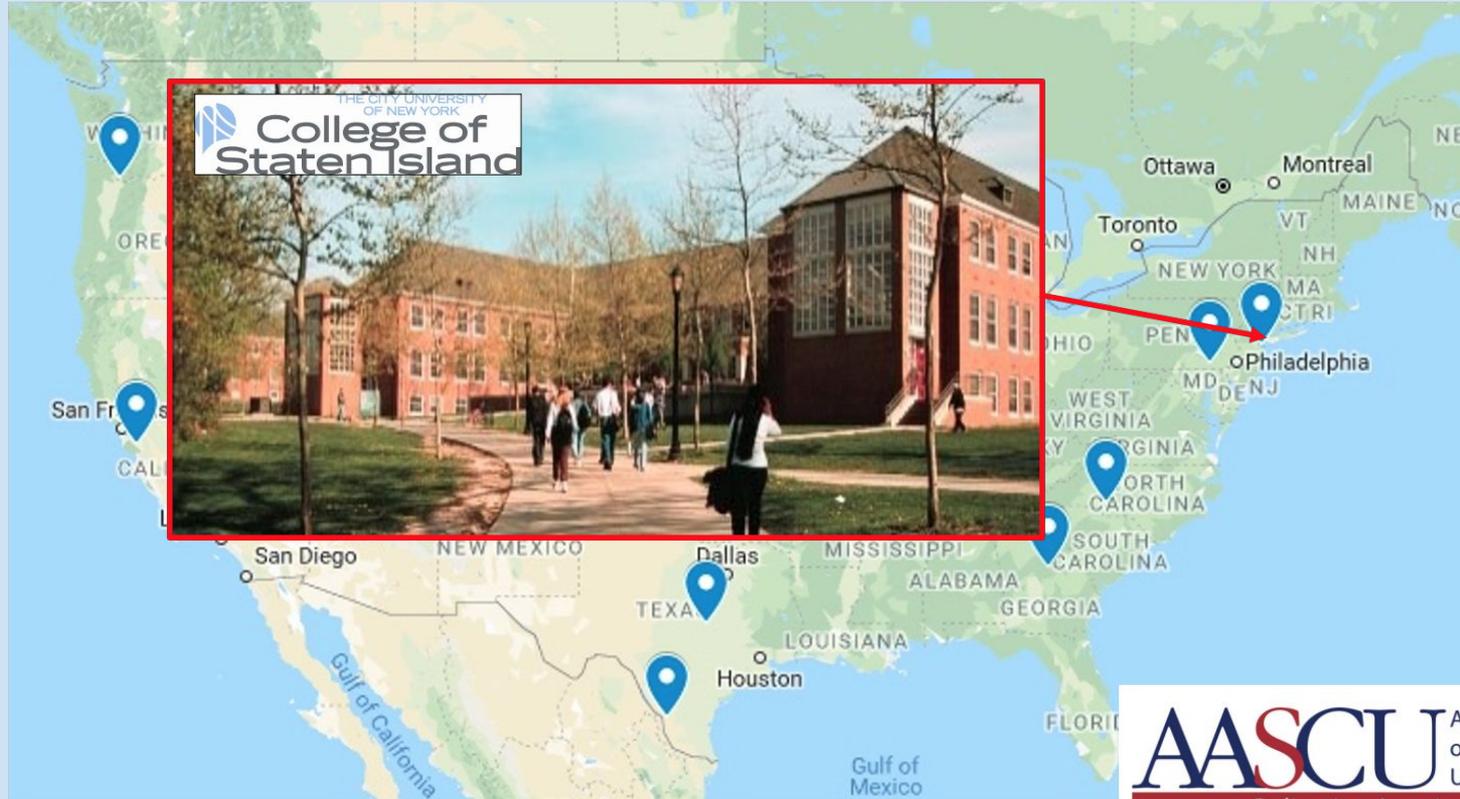
The Digital Polarization Initiative 2018 - Present



AASCU American Association
of State Colleges and
Universities
Delivering America's Promise

<https://www.aascu.org/AcademicAffairs/ADP/DigiPo/>

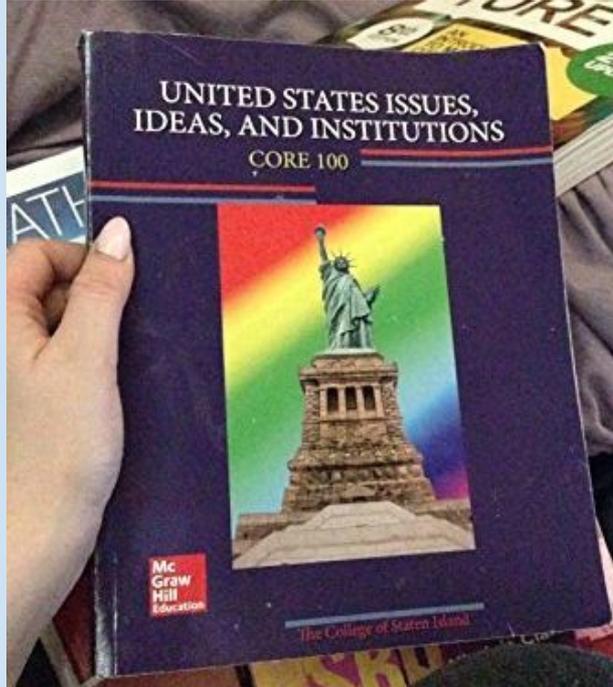
The Digital Polarization Initiative 2018 - Present



AASCU American Association
of State Colleges and
Universities
Delivering America's Promise

<https://www.aascu.org/AcademicAffairs/ADP/DigiPo/>

Teaching SIFT in COR100



Embedded as a component of a general education civics course (COR100)

College students completed an online, asynchronous curriculum teaching them to read laterally using the SIFT acronym

- Pretest / posttest assessments
- 3 instructional assignments with practice problems and feedback
- All administered via Qualtrics survey software

Each Homework assignment focused on a specific topic.

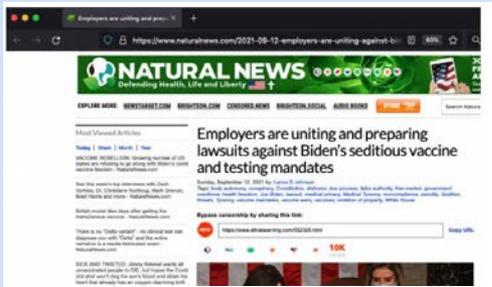
HW 1 focused on COVID-19 vaccine

HW 2 focused on content related to algorithm, such as Facebook testimony

HW 3 focused on impacts on the economy due to COVID-19 pandemic



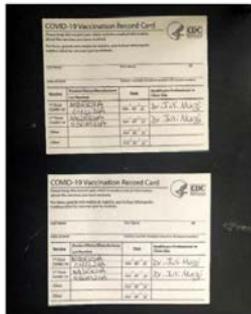
<https://ctrl-f.ca/en/>



We searched "vaccine mandate constitutional" in Google News. The search results indicate that legal experts consider vaccine mandates to be constitutional.



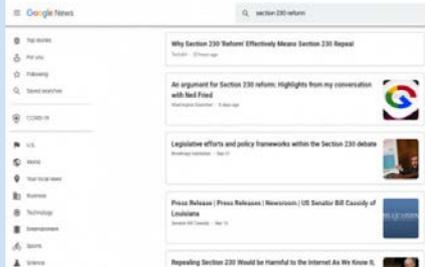
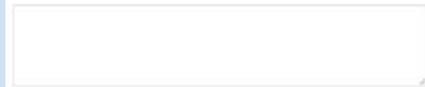
An additional concern with vaccination requirements is the use of falsified vaccine cards.



of Facebook's use of engagement-based ranking algorithms. She also recently testified about this in front of the Senate.

In her testimony, Haugen recommended changing Section 230 of the U.S. Communications Decency Act. Most people are not familiar with Section 230. Wikipedia is a good place to get some background knowledge about a new topic.

Look up "Section 230" on Wikipedia. Based on what you read on Wikipedia, use your own words to describe what this law does.

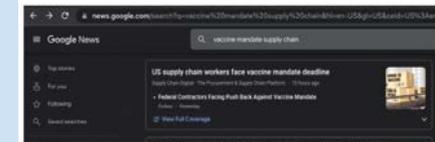


For example, let's say you come across an [article](#) from The Trucker with the following headline:

"ATA: Mandatory vaccines could 'cripple the supply chain'"



We searched "vaccine mandate supply chain" in Google News. The search results indicated that this topic has received a lot of coverage recently and that opinions vary.



Lastly, as you do your research on the economic impact of COVID-19, you might come across emotionally provocative GIFs, like the one below. You should trace these GIFs back to their original context before sharing them.



Homeworks completed out of 3:

Mean = 2.6 (SD = 0.8)

COR100 Outcomes Assessment for Fall 2021-Spring 2022

CSI students ($N = 306$) in COR100

Mean age 19.4 years (SD 4.3) with
51.3% female

White (42.5%), Hispanic/Latine (19.9%),
Asian (16.1%), Black / African American
(13.1%), Other (2.3%)

51.3% first-semester students

37.9% first-generation students



COR100 Outcomes Assessment for Fall 2021-Spring 2022

Pretest/Posttest Design

Three multiple-choice questions aimed at determining whether CSI students would select the lateral reading (SIFT) strategy as the “best strategy to figure out if [content] is trustworthy.” **PREFERENCE**

Four open-response questions aimed at determining whether CSI students would use lateral reading strategies when asked “how much do you trust [content].” **USE**

Likert Scale (8 items) examining whether CSI students understand how Internet algorithms curate online content. **ALGORITHM AWARENESS**

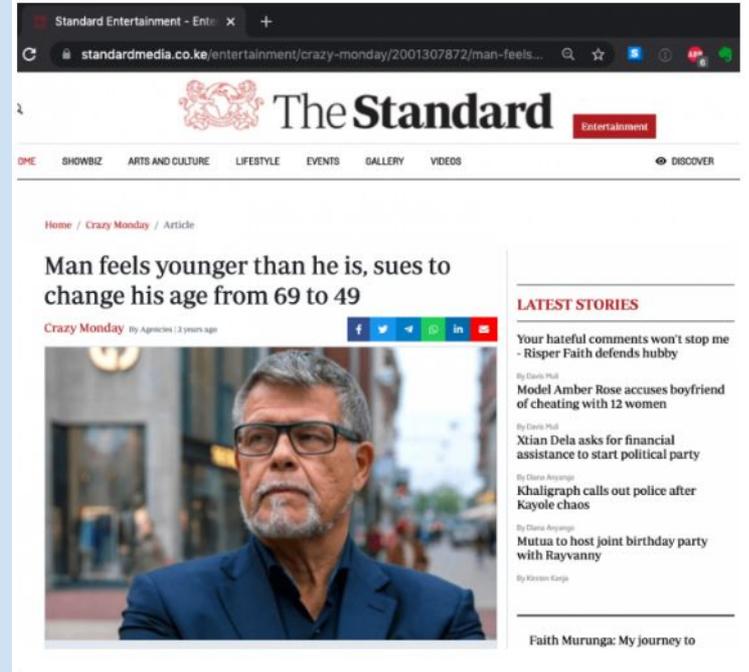
Passage from Regents Exam (pretest only) **READING COMPREHENSION**

Multiple-choice problem for Investigate the Source

Which do you think is the best strategy to figure out if The Standard is a trustworthy source of information?

- **See what other sources, including Wikipedia, tell you about the reputation of The Standard**
- Look at The Standard's About page to learn more about the website
- Review The Standard's website for signs of professionalism, such as how many ads there are on the page, or if there are typos
- Check The Standard's website address to see if it looks official

Here's a link to a news story from *The Standard* that says a man went to court to try to change his age from 69 to 49: <https://www.standardmedia.co.ke/entertainment/crazy-monday/2001307872/man-feels-younger-than-he-is-sues-to-legally-change-his-age-from-69-to-49>

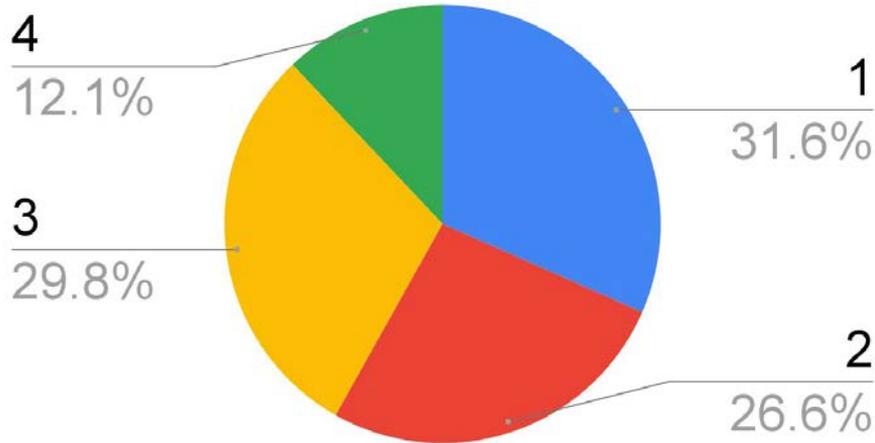


Of the following choices, which do you think is the best strategy to figure out if *The Standard* is a trustworthy source of information?

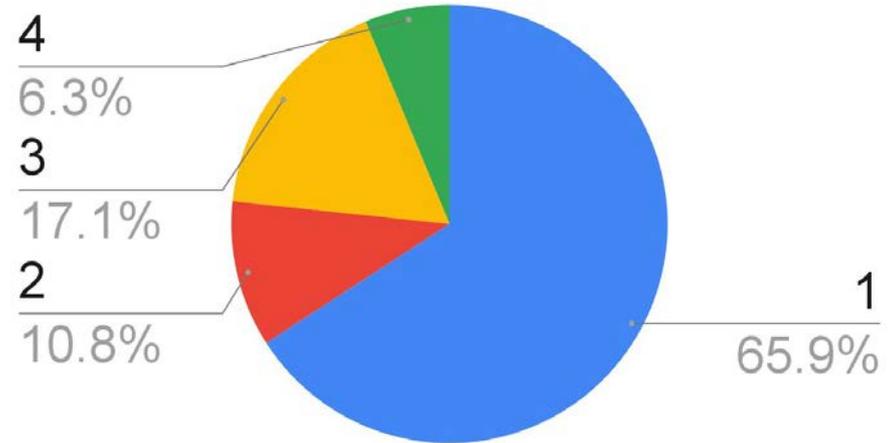
- Look at The Standard's About page to learn more about the website
- See what other sources, including Wikipedia, tell you about the reputation of The Standard
- Review The Standard's website for signs of professionalism, such as how many ads there are on the page, or if there are typos
- Check The Standard's website address to see if it looks official

Which do you think is the best strategy to figure out if [content] is a trustworthy source of information?

Pretest



Post test



1. **See what other sources, including Wikipedia, tell you about the reputation of [content]**
2. Look at [content] About page to learn more about the website
3. Review [content] website for signs of professionalism, such as how many ads there are on the page, or if there are typos
4. Check [content]'s website address to see if it looks official

Multiple-choice problem for Find Better Coverage

Which do you think is the best strategy to figure out if this story is accurate?

- **Search keywords related to the claim to see what other sources say**
- Read the story to see if it presents strong evidence
- Ask a friend or family member about the information in the article
- Check if there are comments under the article to try to learn more

Here's a link to a story that says it was so hot in Italy that farmers installed air conditioning for their cows: <https://weirdanimalreport.com/?q=article/italian-cows-get-air-conditioning-installed>

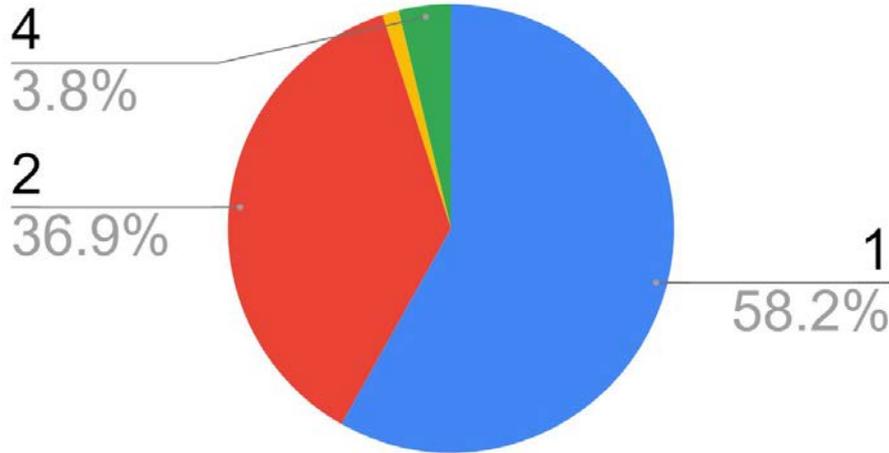
The screenshot shows a web browser window with the URL weirdanimalreport.com/?q=article/italian-cows-get-air-conditioning-installed. The page features a red sidebar with the site's name 'Weird Animal Report' and a main content area. The main headline is 'Italian cows get air conditioning installed' in red. Below it is a photograph of a black and white cow in a green field. A sub-headline reads 'And showers for overheated pigs'. The main text below the photo states: 'Farm animals in Italy's Po Valley are getting a special treat this summer, thanks to the record-breaking heat wave: **air conditioning and in-barn showers.**'

Of the following choices, which do you think is the best strategy to figure out if this story is accurate?

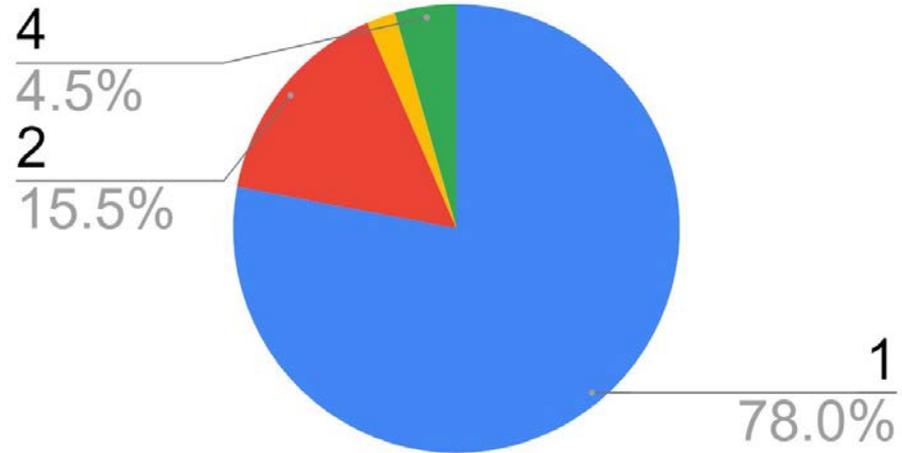
- Read the story to see if it presents strong evidence
- Ask a friend or family member about the information in the article
- Search keywords related to the claim to see what other sources say
- Check if there are comments under the article to try to learn more

Which do you think is the best strategy to figure out if this story is accurate?

Pretest



Post test



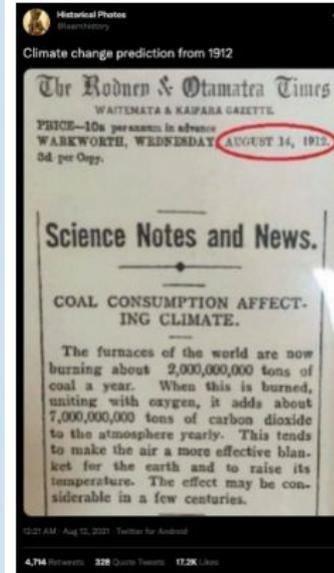
1. **Search keywords related to the claim to see what other sources say**
2. Read the story to see if it presents strong evidence
3. Ask a friend or family member about the information in the article
4. Check if there are comments under the article to try to learn more

Multiple-choice problem for Trace claim, quotes, and media to the original context

Which do you think is the best strategy to figure out if this image shows what is claimed?

- **Conduct an image search to learn more**
- Look at the comments under the post to try to learn more
- Think about whether it seems realistic
- Look carefully at the image to see if it has been altered

Here's a post that claims to show a newspaper article from 1912 predicting climate change:
<https://twitter.com/learnhistory/status/1425673866609762306>

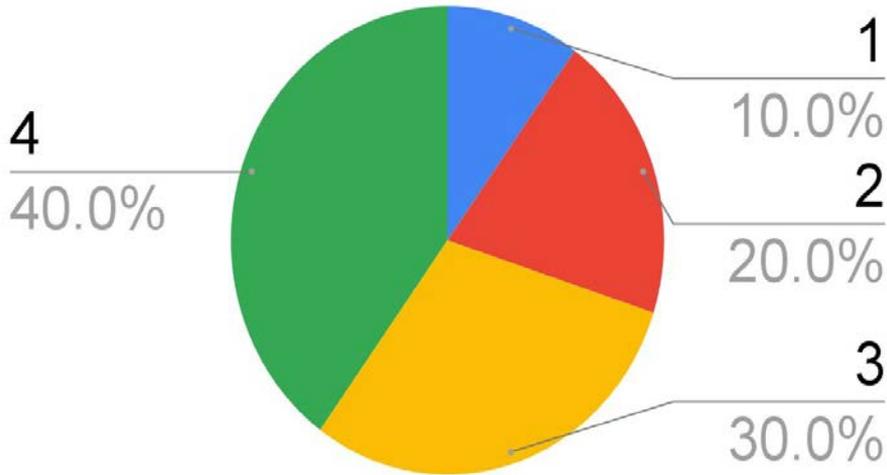


Of the following choices, which do you think is the best strategy to figure out if this image shows what is claimed?

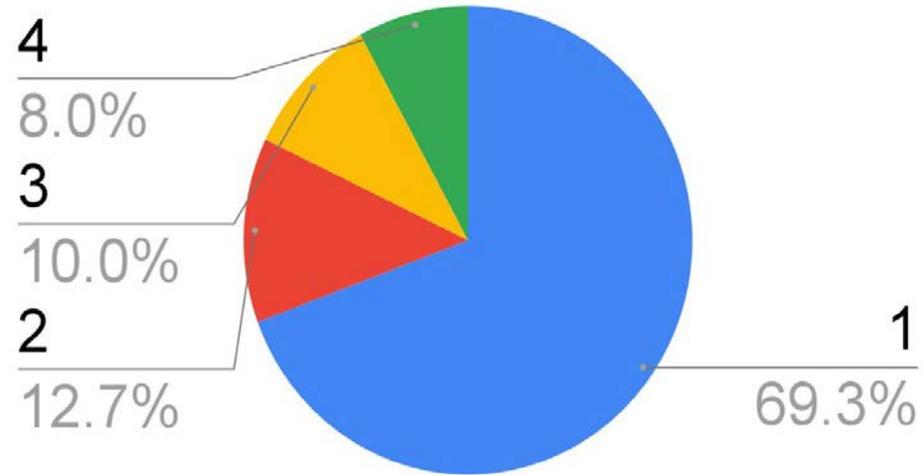
- Look at the comments under the post to try to learn more
- Think about whether it seems realistic
- Look carefully at the image to see if it has been altered
- Conduct an image search to learn more

Which do you think is the best strategy to figure out if this image shows what is claimed?

Pretest



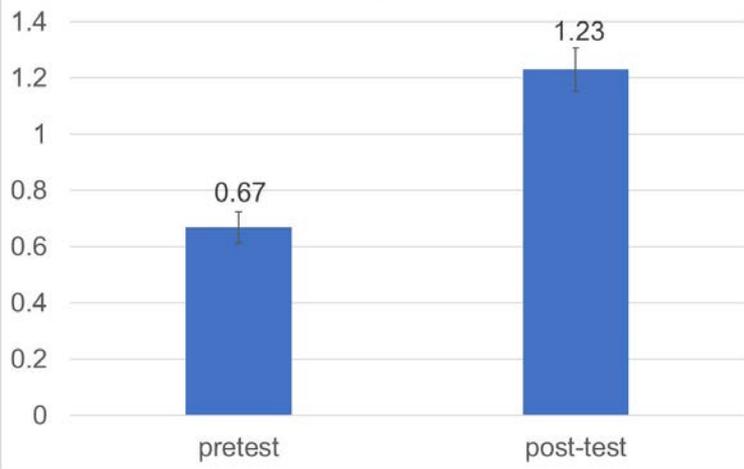
Post test



1. **Conduct an image search to learn more**
2. Look at the comments under the post to try to learn more
3. Think about whether it seems realistic
4. Look carefully at the image to see if it has been altered

Open-response problems for evaluating online content

Lateral Reading USE



The average score of open-responses increased from 0.67 (*SD* 0.97) at pretest to 1.23 (*SD* 1.33) at posttest (out of 4)

<https://www.nvjc.org/vaccines-and-diseases/covid-19.aspx>

Here is a link to a news story that says that AstraZeneca's new antibody therapy may protect against COVID-19: <https://delawarebusinessnow.com/2021/08/strong-results-for-astrazeneca-covid-antibody-treatment-reported/>

Here is a link to a news story that says that Novavax is developing a single vaccine that will offer protection against both COVID-19 and the flu:

<https://www.deseret.com/coronavirus/2021/09/22/22664458/novavax-flu-covid-19-vaccines>

<https://childrenshealthdefense.org/protecting-our-future/covid-vaccine-safety-concerns/>

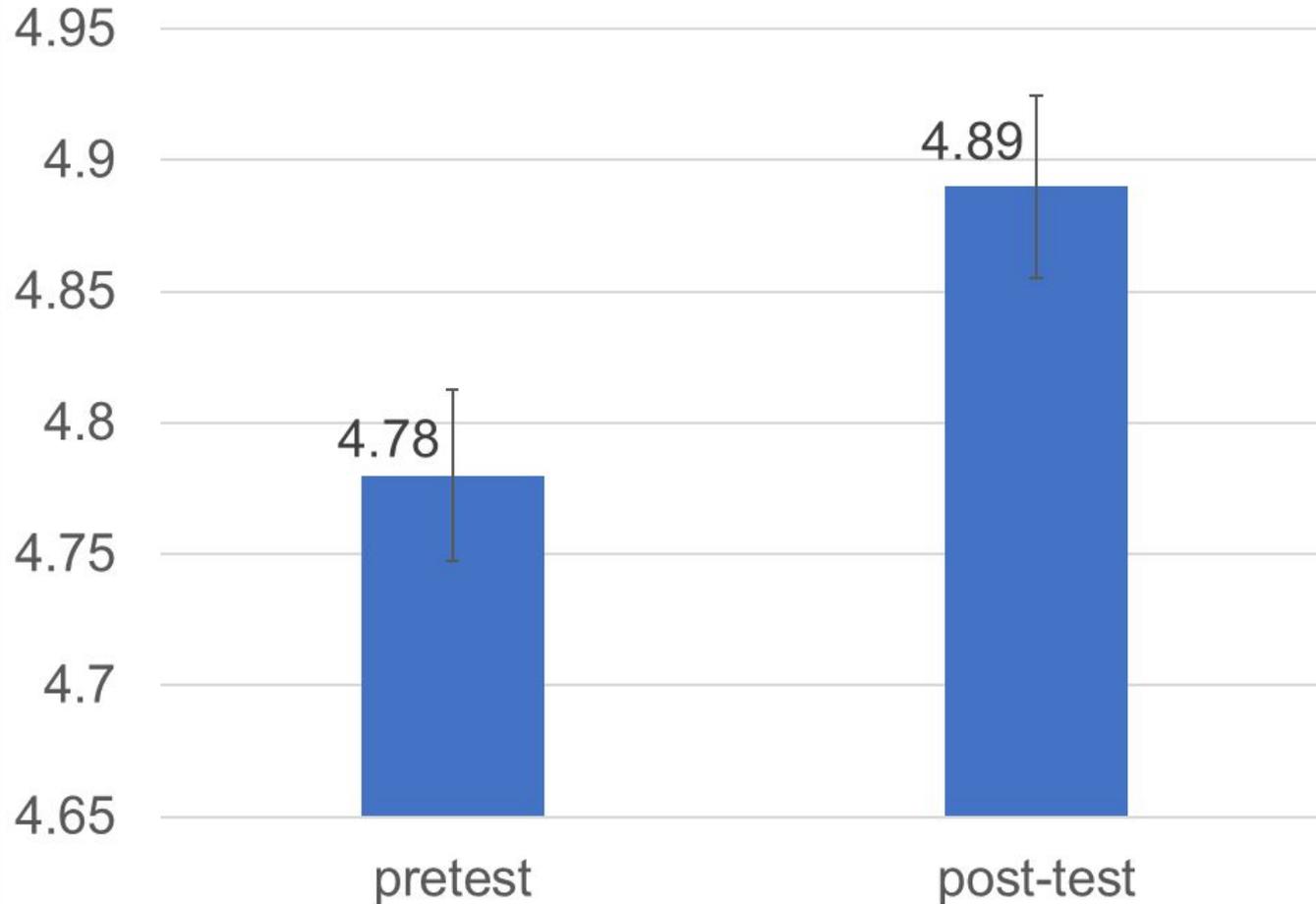
Algorithm Awareness (Zarouali, 2021)

(1) Strongly Disagree, (2) Disagree, (3) Slightly Disagree, (4) Neither Disagree nor Agree, (5) Slightly Agree, (6) Agree, (7) Strongly Agree

Item	Time	Mdn	M (SD)
FIL1 Algorithms are used to recommend posts to me on social media	Pre	6	6.0 (1.04)
	Post	6	5.9 (1.04)
FIL4 Algorithms make it so that different people get different Google search results even when they use the same search terms	Pre	5	4.6 (1.52)
	Post	5	4.8 (1.54)
ADM1 Algorithms organize posts on social media without relying on humans to make the decisions	Pre	5	4.5 (1.68)
	Post	5	4.8 (1.56)
ADM3 Algorithms make automated decisions on which search results I see on Google	Pre	6	5.2 (1.29)
	Post	6	5.4 (1.28)
HAI1 Algorithms recommend posts to me on social media based on what I like to look at on social media	Pre	6	6.1 (1.07)
	Post	6	6.0 (1.27)
HAI2 Algorithms present search results to me on Google based on what I searched for in the past	Pre	6	5.6 (1.23)
	Post	6	5.7 (1.12)
ETH1 It is not always clear why algorithms decide to show me certain search results on Google	Pre	5	4.3 (1.54)
	Post	4	4.2 (1.63)
ETH3 Algorithms use information about me to recommend posts on social media, and this has consequences for my online privacy	Pre	6	5.6 (1.25)
	Post	6	5.6 (1.33)

Cronbach's alpha: 0.63

Algorithm Awareness



The average rating of algorithm items increased from 4.78 (*SD* 0.57) at pretest to 4.89 (*SD* 0.61) at posttest

CSI Students Showed Gains Across the Board

PREFERENCE
for SIFT
(3 problems)

USE of SIFT
(4 problems)

ALGORITHM
AWARENESS
(average rating)

Pretest

1.51 (0.97)

0.67 (0.97)

4.78 (0.57)

Posttest

2.24 (0.98)

1.23 (1.33)

4.89 (0.61)

t-test

$t(609.87) = 9.15,$
 $p < .001$

$t(553.1) = 6.04,$
 $p < .001$

$t(607.35) = 2.34,$
 $p = .020$

What factors were associated with PREFERENCE for SIFT strategies at posttest (multiple-choice problems)?

Predictor	<i>B(SE)</i>	<i>p</i>
Intercept	0.10 (0.48)	.827
SIFT strategies selected at pretest	0.17 (0.06)	.005
Use of SIFT strategies at pretest	0.10 (0.06)	.101
Algorithm awareness score at pretest	0.19 (0.10)	.0499
Reading comprehension score	0.10 (0.03)	.004
Number of HWs attempted	0.24 (0.07)	<.001

What factors were associated with USE of SIFT strategies at posttest (open-response problems)?

Predictor	<i>B(SE)</i>	<i>p</i>
Intercept	-0.21 (0.63)	.738
Use of SIFT strategies at pretest	0.19 (0.08)	.021
SIFT strategies selected at pretest	0.30 (0.08)	<.001
Algorithm awareness score at pretest	-0.06 (0.13)	.656
Reading comprehension score	0.16 (0.04)	<.001
Number of HWs attempted	0.27 (0.09)	.003

What factors were associated with ALGORITHM AWARENESS at posttest (Likert scale)?

Predictor	<i>B(SE)</i>	<i>p</i>
Intercept	2.94 (0.28)	<.001
Algorithm awareness score at pretest	0.32 (0.06)	<.001
SIFT strategies selected at pretest	0.09 (0.04)	.009
Use of SIFT strategies at pretest	0.01 (0.04)	.742
Reading comprehension score	0.08 (0.02)	<.001
Number of HWs attempted	- 0.02 (0.05)	.718

What did we learn?

- Student gains in PREFERENCE and USE of lateral reading strategies were tied to numbers of homeworks completed. In prior work, students in a control classes (without instruction) did not make gains. (Brodsky et al., 2021)
- Gains were larger for PREFERENCE than for USE of SIFT. It is possible that our keyword search method of scoring open-responses underestimated use of SIFT strategies. We have modified the prompt by asking students to list websites they are using when evaluating content.
- ALGORITHM AWARENESS was associated with PREFERENCE but not USE of SIFT. Future work is needed to validate this scale with other measures (e.g., open-response prompts to explain Internet algorithms).
- Reading comprehension is associated with learning via an online curriculum.

Thank you!

The CTRL+F Project for letting us adapt the curriculum and use the videos.

To the research team and the COR100 instructors who are using this curriculum to teach students fact-checking skills

Contact: alodhi@gradcenter.cuny.edu

Instructional Resources

SHEG: How fact-checkers evaluate information online

<https://sheg.stanford.edu/about/updates/2017/how-fact-checkers-evaluate-information-online>

CTRL-F: <https://ctrl-f.ca/en/>

Caulfield, M. (2019, June 19). SIFT (the four moves).

<https://hapgood.us/2019/06/19/sift-the-four-moves/>

Previous study materials on OSF: <https://osf.io/9rbkd/>