**Scientists, stop thinking explaining science will fix things.**

**It won’t. Try this instead.**

If you consider yourself to have even a **passing familiarity** with science, you must have found yourself in a state of disbelief as the president of the United States called climate scientists “hoaxsters” and pushed conspiracy theories about vaccines. The Trump administration seemed practically allergic to evidence. And it’s not just Trump—plenty of people across the political spectrum h……… bizarre and inaccurate ideas about science, from climate change and vaccines to guns and genetically modified organisms.

If you are a scientist, this disregard for evidence probably drives you crazy. So what do you do about it?

It seems many scientists would take matters into their own hands by learning how to better communicate their subject to the masses. They hope that by doing a better job of explaining science, they can **move the needle** toward scientific consensus on **politically charged** issues. After all, scientists’ top reason for engaging the public is to inform and defend science from misinformation.

It’s an admirable goal, but almost certainly **destined to** fail. This is because the way most scientists think about science communication—that just explaining the real science better will help—is plain wrong. In fact, it’s so wrong that it may have the opposite effect of what they’re trying to achieve.

Before **getting fired up to** set the scientific record straight, scientists would do well to first consider the science of science communication. The theory many scientists seem to swear by is technically known as the deficit model, which states that people’s opinions differ from scientific consensus because they lack scientific knowledge. In 2010, Dan Kahan, a Yale psychologist, essentially proved this theory wrong. He surveyed over 1,500 Americans, classifying each person’s “cultural worldview” on a scale that roughly correlates with politically liberal or conservative. He then assessed each person’s **scientific literacy** with questions such as “True or False: Electrons are smaller than atoms.” Finally, he asked them about climate change. If the deficit model were correct, Kahan reasoned, then people with increased scientific literacy, regardless of worldview, should agree with scientists that climate change poses a serious risk to humanity.

That’s not what he found. Instead, Kahan found that increased scientific literacy actually had a small negative effect: The conservative-leaning respondents who knew the most about science thought climate change **posed** the least risk. Scientific literacy, it seemed, increased polarization. In a later study, Kahan added a twist: He asked respondents what climate scientists believed. Respondents who knew more about science generally, r……………. of political leaning, were better able to identify the scientific consensus—in other words, the polarization disappeared. Yet, when the same people were asked for their own opinions about climate change, the polarization returned. It showed that even when people understand the scientific consensus, they may not accept it.

The **takeaway** is clear: Increasing science literacy alone won’t change minds. In fact, well-meaning attempts by scientists to inform the public might even **backfire**. Presenting facts that conflict with an individual’s worldview, it turns out, can cause people to **dig in** further. Psychologists, aptly, dubbed this the “backfire effect.” If scientists simply want to explain science to a curious audience, **disseminate** their research more broadly, or write for fun, this doesn’t matter much. But if scientists are motivated to change minds, they will be sorely disappointed.

**That’s not to say** scientists should return to the bench and keep their mouths shut. They should just realize that closing the “information gap” isn’t the goal. And instead, they need to learn how to communicate science strategically.

There are obvious reasons why science communication is a necessary and worthwhile **endeavour**, but a huge one is that there’s a politically motivated push to destabilize scientific authority. At a conference last month, Lamar Smith, the Republican chairman of the House science committee, told **attendees** he would now refer to “climate science” as “**politically correct** science,” to loud cheers. This **lumps** scientists **in** with the **nebulous** “left”.

Is it any surprise, then, that lectures from scientists built **on the premise** that they simply know more (even if it’s true) fail to convince this audience? Rather than fill the information deficit by building an arsenal of facts, scientists should instead consider how they **deploy** their knowledge. They may have more luck communicating if, in addition to presenting facts and figures, they ap………… to emotions. This could mean not simply explaining the science of how something works but spending time on why it matters to the author and why it ought to matter to the reader. Research also shows that science communicators can be more effective after they’ve gained the audience’s trust. With that in mind, it may be more **worthwhile** to f………… out how to talk about science with people they already know, through, say, local and community interactions, than it is to try to publish **explainers** on national news sites.

Scientists can also learn to avoid certain pitfalls. One of them is the belief that ref…………. stories that deny climate change by ad…………… each claim and explaining why it’s wrong is not that productive. In fact, it could be counterproductive: “If you repeat the myth, that’s the part people remember even if you immediately **debunk** it,” says one scientist. A better approach is to **reframe** the issue. Don’t just keep explaining why climate change is real—explain how climate change will hurt public health or the local economy. Communication that appeals to values, not just intellect, research shows, can be far more effective.

The deficit model is difficult to unlearn. It’s very logical, and it comes naturally to scientists because most have largely spent their lives in school—whether as students, professors, or mentors—and the deficit model perfectly explains how a scientist learns science. But the obstacles f……….. by science communicators are not **epistemological** but cultural. The skills required are not those of a university lecturer but a rhetorician.

**Epistemology**: the philosophical study of the nature, origin, and limits of human knowledge

**Text comprehension**

1. What is the deficit model?
2. What did Kahan’s experiment show about the link between scientific literacy and the belief in unscientific theories?

**Some top YT science channels (number of subscribers):**

1. Vsauce (17.3 million)
2. Kurzgesagt – In A Nutshell (17.3 million)
3. Veritasium (11.1 million)
4. SmarterEveryDay (10.1 million)
5. Minute Physics (5.4 million)
6. Numberphile (4 million)
7. Computerphine (2 million)
8. Periodic Vidoes (1.5 million)
9. Steve Mould (1.3 million)
10. Nauka. To Lubię (0.5 million)