Letter to the Editor

September 16, 2021
The September/October issue of The Science Teacher contains many things that need critical examination. Before doing so, I need to clearly state that any form of racism or sexism is demonstrably ignorant and destructive and should never be tolerated. The Editor’s Corner (pp. 6–7) implies that any resistance to the Black Lives Matter movement is racist and wrong. I would respectfully suggest that an examination of the complete position of the BLM organization would reveal ideas unacceptable to many reasonable people. The editorial also strongly supports Critical Race Theory (CRT), including “…skepticism toward the idea of objective knowledge, individual merit, and universal values.” I am 78 years old, retired after 41 years in education, and that is the most discouraging, erroneous, and frightening statement I ever saw in a publication aimed at improving science education. Isn’t objectivity the fundamental core principle of science? Isn’t lack of objectivity responsible for the bitter disagreements tearing apart our society right now? I also strongly object to the part of CRT that says I can be judged completely by my appearance—my skin color. No one—no one—can know the content of my heart, my mind, my soul by just looking at me. Isn’t that the worst form of prejudice there could ever be? I don’t mind being judged by my actions and my words. I sincerely hope you will publish this letter so my ideas can be judged by reasonable discussion and consideration. That is what freedom of speech is all about.

There are more problems presented in some of the articles in this issue. On page 8, Sara Krauskopf states the importance of “…the need to acknowledge and respect the variety of cultural contexts in which knowledge is produced. The cultural dominance of Western science practices limits the questions we ask, the culture we accept, and … the completeness of our answers.” If we are going to include various forms of Indigenous Knowledge as a necessary content of science classes, should we include astrology? How about Phrenology? What boundaries for what is and what is not science are acceptable? On page 26, in the article “Climate Justice”, Kotlie Christie-Blick states: “The science showing causation between anthropogenically induced greenhouse gases and the rise in global temperature is clear…” The truth is that the science is not clear and that the models used for predictions are filled with a variety of assumptions. There is a tendency to focus on the most extreme predictions made by climate models without consideration of the uncertainties imbedded in the models. Of course, climate issues need to be addressed, but in an orderly, reasoned fashion. The article “Gender Inclusive Biology” (pp. 27–33) would be improved by going beyond redefining “male” and “female” and investigating the effects of allowing biologic males to participate in women’s sports. “Wholistic Science Pedagogy–Teaching for Justice” (pp. 52–57) demonstrates a clear bias about the United States as a primary cause of carbon dioxide emissions. This is verified by the careful selection of the data presented in Figure 2 (p. 54). Note that the carbon dioxide emission figure (Station 1) covers the years 1900–2004. This ignores the rapid growth in emissions from China which now produces much more carbon dioxide than the United States. This is easily verified by any internet search. For example, Wikipedia states that in 2015, China produced 20.4 % of global carbon dioxide emissions and the United States produced 14.4 %. Without a doubt, much more similar recent data can be found. Obviously, the authors wanted to leave the impression that the United States is the main source of any problems. The authors’ view of science teachers is made abundantly clear on page 53 when they say, “…teachers must ever question the foundation of their belief systems … Upon finding values that are steeped in oppression or white supremacy, they then do the work of deconstructing these problematic mindsets.” I would respectfully suggest that this issue of The Science Teacher is filled with “problematic mindsets” and is setting science teaching on a path that cannot possibly have a good outcome.

—Eugene E. Nalence
**Response from Ann Haley Mackenzie, Field Editor**

While I disagree with the charges brought forth by Mr. Nalence regarding my remarks about Critical Race Theory, I acknowledge his right to question them. I urge Mr. Nalence to read and study what Critical Race Theory truly focuses on—not what is urban legend or a political talking point—regarding its importance in science teaching.

I would also ask Mr. Nalence to look into works examining microaggressions that occur on a daily basis, including:

- **Racial Microaggressions: Using Critical Race Theory to Respond to Everyday Racism**, by Daniel G. Solórzano and Lindsay Pérez Huber
- **Teaching With Racial Microaggressions in Mind: How to Recognize and Stop Using Racial Microaggressions in Your K-12 Classroom**, by Joseph R. Gibson

Overall, I hope Mr. Nalence will take the opportunity to read, study, and reflect on the concepts of diversity, equity, and inclusion, and their importance for science teachers in making their classrooms more welcoming, inclusive learning spaces that investigate the wonders of the natural world in an equitable manner.

**Response from Kottie Christie-Blick**

Thank you for your response to these articles, including mine. I too was taught that science was, and always strives to be, objective. We use controls, create detailed protocols, and make measurements. But as you pointed out, “scientific” trends like phrenology, which practiced such steps, are often debunked when flaws are found in the premise of the study, bias found in the way measurements were taken, or prejudice uncovered in the scientists who conducted the study who were trying to prove a particular point.

When I suggest that we include Indigenous forms of Knowledge in science classes, I do not suggest that we throw away our critical approach to investigation. We already include many forms of evidence in scientific studies and critique how the information was collected. In fact, our conclusions are stronger when a variety of studies and approaches all converge on the same idea. It is problematic that many scientists with Western training dismiss and/or devalue Indigenous Knowledge. Much of Indigenous Knowledge is based on longitudinal observations of the natural world. When someone lives in one place for decades, they come to know that place extremely

**Response from Sara Krauskopf**

Dear Mr. Nalence,

Thank you for your response to these articles, including mine. I too was taught that science was, and always strives to be, objective. We use controls, create detailed protocols, and make measurements. But as you pointed out, “scientific” trends like phrenology, which practiced such steps, are often debunked when flaws are found in the premise of the study, bias found in the way measurements were taken, or prejudice uncovered in the scientists who conducted the study who were trying to prove a particular point.

When I suggest that we include Indigenous forms of Knowledge in science classes, I do not suggest that we throw away our critical approach to investigation. We already include many forms of evidence in scientific studies and critique how the information was collected. In fact, our conclusions are stronger when a variety of studies and approaches all converge on the same idea. It is problematic that many scientists with Western training dismiss and/or devalue Indigenous Knowledge. Much of Indigenous Knowledge is based on longitudinal observations of the natural world. When someone lives in one place for decades, they come to know that place extremely
well. They notice trends, know where something grows, what time of year to expect events to happen, how to read the sky, waters, and land in a predictable, patterned way. They know that place in far more detail than a “scientist” visiting for a few days, a month or even a year ever could.

That Knowledge and Way of Knowing is generally passed on from generation to generation through apprenticeship and Oral Histories, not in writing. In Western Science we are trained to write everything down and to distrust our memories. This is not the case for many Indigenous Peoples, and we (meaning Western scientists) have learned time and time again that the observations of Indigenous people who know the land where they live, “are right” once we do our own studies. What I am suggesting is working respectfully and collegially to expand our collective knowledge base with these complementary techniques. If the data concurs, the conclusions we draw are stronger. If they disagree, then we need to critically examine why.

As I’m sure the other responses to your letter will argue, because scientists are human, we bring our biases to our work. Eugenics research and aligned government policies in the United States inspired Hitler to commit genocide, discriminatory algorithms in artificial intelligence today often do not work correctly on people with dark-colored skin because the scientists used white subjects to train the software. We must always be critical of how we do our work. More eyes on the work from people from a variety of backgrounds helps root out bias and create a more reliable outcome.

—Sara Krauskopf

Response from Lewis Steller, Sam Long, and River Suh

We write with concern about the opinions expressed in Mr. Nalence’s response to the recent articles published in The Science Teacher. We feel his letter promotes many harmful and dangerous misconceptions about both science and science education.

In particular, we would like to be clear that both from a scientific and social perspective, transgender women belong in women’s athletics. In 2021, there has been unprecedented growth in anti-trans legislation designed to bar transgender youth from participating in sports teams, especially transgender girls. This legislation and the view expressed by Mr. Nalence’s letter are misguided because:

1. Sex is not binary. Individual variation among specific sex traits, such as testosterone levels, occurs even among cisgender men and cisgender women.
2. There is no scientific evidence that supports the idea that transgender women have an advantage over cisgender women in sports. Read more about available evidence in the sources cited below.
3. Olympic regulations have permitted transgender women’s participation in women’s events since 2004. There has not been a takeover of women’s sports by transgender women during that time.
4. The majority of states where legislation is being passed have had no issues surrounding trans students’ participation in girls’ sports. The outrage appears to be directed at an issue that does not really exist – transgender girls who have had access to sports teams have participated with their peers without cause for concern.
5. Anti-trans legislation and perspectives fundamentally misunderstand the trans experience. Transgender people, especially transgender youth, already experience high rates of bullying, discrimination, and mental health concerns. By preventing transgender youth from participating in sports teams, legislators are removing an essential space for personal development and connection with the broader community. These kinds of connections are essential for all people, regardless of their gender identity.

This legislation and the perspective about transgender people it affects are harmful because they perpetuate dangerous misconceptions about transgender people. They work to remove an important space for social and physical development. Most of all, they are dangerous because they are not supported by scientific evidence. We hope that Mr. Nalence and those who share his views will find time to educate themselves about the facts surrounding this and the other issues raised in his letter.

—Lewis Steller, Sam Long, and River Suh

Gender-Inclusive Biology Project

FURTHER READING


Letter from Alexis Patterson Williams, Ph.D.

Note: Alexis Patterson Williams declined to respond directly to the original letter, but asked that we publish her letter to Editor Ann Haley Mackenzie.

Hi Ann, Salina and I will not be crafting a response to Mr. Nalence’s email. As two black women, we found his rant to be riddled with racial and gender bias. The tone of his email was presumptive at best and libelous, if we read it given the anti-black tone of our current political climate. It is quite insulting to be called anti-American and anti-teacher. Salina is
a current classroom teacher and teacher educator, and I currently work with pre-service and in-service teachers as a teacher educator and researcher. We both respect our fellow educators for the work they are doing and also believe they aspire to do what is right for our children. This is the spirit with which our article was written and the population we thought this journal would engage with.

To be clear, it is fine to have suggestions for additional images to add to our activity or to take liberties as a teacher to modify the activity to fit one’s classroom. It is also appropriate to have questions about what CRT is and if it is appropriate for classroom conversations. As scholars, we often engage in academic debates, and we welcome constructive as well as critical feedback. However, Mr. Nalence’s email was not constructive, it did not ask sincere questions of clarification, nor suggest materials to make the activity more robust—it was an outright assault of our character and intent.

I am actually surprised that Mr. Nalence’s email is being given a platform, as this kind of racist and sexist drivel does not come across as maintaining the spirit of collegiality or generosity that warrants engagement. His email is quite harmful. For the reasons outlined above, we will decline to engage in conversation with Mr. Nalence.

—Alexis Patterson Williams, Ph.D.

NSTA wishes to thank those who have participated in this discussion. Science education is a constantly evolving field, where ideas form and change over time due to evidence and research. Our purpose in publishing this dialogue is to focus on the scientific data and share additional information on the relevant science. There is always room for healthy dialogue, and we hope that The Science Teacher represents such a space.