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Resolved: Climate Change is NOT a Crisis

Peter Buckland

Penn State's Sustainability Institute

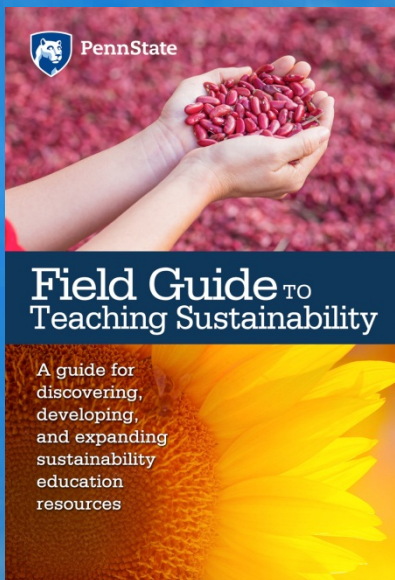
Curator of *The Field Guide to Teaching Sustainability*

Email: pdb118@psu.edu

Twitter: [@pdbuckland](https://twitter.com/pdbuckland)

Field Guide to Teaching Sustainability

[sustainability.psu.edu/fieldguide/]



Penn State's *Field Guide to Teaching Sustainability* makes it easier for faculty to **discover, implement, and share** good curriculum for sustainability.

The *Field Guide* is structured so that you can browse assignments and resources created by your peers, quickly find peer-reviewed, professional, and popular sources, and connect with others to dive deeper into the global sustainability conversation.

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What will you find on the *Field Guide*?

- Curated, up-to-date, cross discipline assignments.
- Resources from peer-reviewed journals, major documents in the field, media, government, and more.
- Blog entries focused on sustainability education praxis and current events.
- A platform to contribute assignments, resources, and your own writing to expand access to sustainability education resources.

Questions? Email sustainability@psu.edu.



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Home » The Curator's Blog » Engaging climate (mostly science) curricula

ENGAGING CLIMATE (MOSTLY SCIENCE) CURRICULA

August 20, 2015 | 0 comments

There is a lot of climate science curricula out there. Because science is where people have worked out standards and built a consensus, there's lots of authority and material. We cannot find everything. But we want you to have good places to start. Below we provide links to three major sources (CLEAN, ACE & Climate.gov) materials you can use in your courses.

All of these links focus on the science of climate. Most of them feature advocacy of one kind or another and some present humanistic inquiries too. Most move students from climate science to working on advancing energy- and greenhouse gas emissions targets at their schools or with politicians. As the last post noted, there's a lot of education for climate neutrality mixed in.

A thoughtful teacher can adapt these materials. For example, [mock United Nations Framework Convention on Climate Change debates](#) can be assigned in physical and environmental science classes as easily as they can in rhetoric, political science or social studies education courses. We also provide links to other sources from PBS, BBC, and Skeptical Science. We will post all of these in the [Resources](#) section of [The Field Guide to Teaching Sustainability](#) under [Climate Science Resources: Basics](#).

Resources

The [Climate Literacy and Energy Awareness Network](#) (CLEAN) provides educational resources vetted by scientists. One section you will want to peruse includes the [climate and energy principles](#) which material to

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MISSION STATEMENT

Our Mission

The mission of The Kiski School is to prepare young men to succeed in college and in life.

Statement of Beliefs

We are a School for boys: an environment for living and learning built around a boy's unique qualities and dedicated to serving each boy's needs.

We believe in the fullest development of every boy's mind, body and soul, and do so by exposing each to growth opportunities in our academic, athletic, artistic, and extracurricular arenas.

We believe in an academic environment that stretches our boys' capacities, ignites a passion for the pursuit of knowledge, and creates ambitious thinkers who can compose and command their own unique thoughts.



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FOREST STEWARDSHIP COUNCIL CERTIFIED WOOD

Thriving forests serve people in that they filter water and air, sink carbon, regulate microclimates and the global climate, act as a habitat for plants and animals, and are beautiful places. Of course, trees are harvested for lumber in building homes. However, forests have been degraded or eliminated as the civilization has developed. To keep forests healthy and create a sustainable lumber economy, the Forest Stewardship Council (FSC) created an evaluation system to promote sustainable practices. All of the wood in MacColl Hall comes from FSC-certified sources.

At the end of the 19th century, Pennsylvania's booming steel industry had devoured its trees. People called the landscape "the Pennsylvania desert." On January 1, 1897, Joseph Rothrock, the father of Pennsylvania forestry, submitted a preliminary report to the Honorable Thomas J. Edge, who was then the Secretary of Agriculture. Rothrock was concerned about Pennsylvania's forests, particularly its susceptibility to fire. He wrote, "A most important problem presents itself for consideration; namely, that of forest reservations. Strip it of collateral ideas and the fact at the bottom of the whole question is--the State must have a due proportion of woodland. It is an absolute condition upon which not only our prosperity but the very protection of the State depends."

Pennsylvania's forests shade cold water trout streams, house game animals, contain thousands of miles of trails, and hold parks and natural areas where some of eastern North America's oldest organisms - Eastern Hemlocks estimated at nearly 1,000 years old - live. Recent research says 59 percent of Pennsylvania is forested. As agricultural fields succeed into forests, that percentage rises. However, urbanization and development threaten to reverse this trend. Researchers at Penn State University expect that without more sustainable actions, Pennsylvania forests will decline in the next decade. The potential decline aligns with global trends.

Source: MacColl Features Lighting

Sustainable Features of MacColl Hall

Building Envelope

Lighting

Variable Refrigerant Flow VRF-HVAC System

Forest Stewardship Council Certified Wood

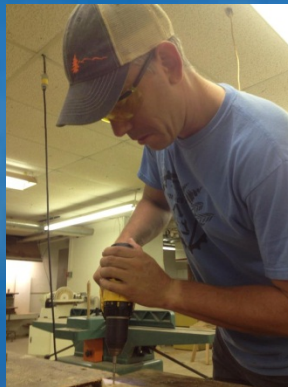
Water Conservation and Care

Real-time Energy Consumption Monitoring Display

Reclaiming the Landscape

Healthy Indoor Environments

Material Reuse and Cradle to Cradle





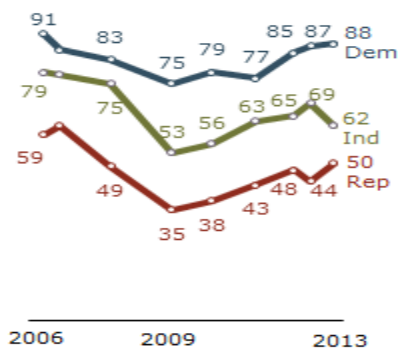
My hunch

Partisan Views of Global Warming; Many Tea Party Republicans Say It's 'Just'

Solid evidence the earth is warming?	All adults	Dem/Lean Dem
	%	%
Yes	67	84
<i>Mostly because of ...</i>		
Human activity	44	64
Natural patterns	18	17
Don't know	4	4
No solid evidence	26	11
Don't know enough yet	12	7
Just not happening	13	4
Don't know	1	*
Mixed evidence (Vol.)/DK	7	5
	100	100
N	1,504	726

PEW RESEARCH CENTER Oct. 9-13, 2013.
Figures may not add to 100% because of rounding.

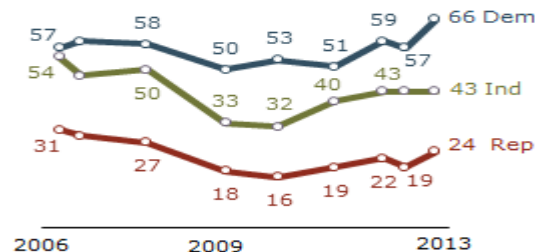
Is Global Warming Evidence Solid?



PEW RESEARCH CENTER Oct. 9-13, 2013.

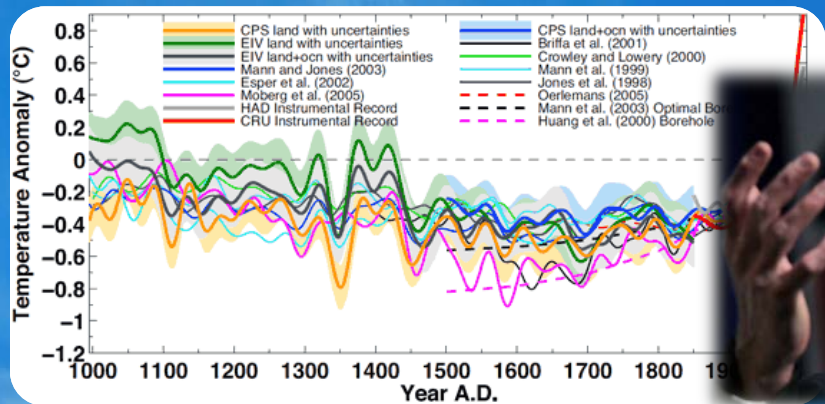
Partisan Gap over Whether Human Activity is Main Cause of Warming

% who say global warming is happening mostly because of human activity



PEW RESEARCH CENTER Oct. 9-13, 2013.

My hunch



Environmental Science at Kiski



- Scientific literacy
- Concept mastery
- Sustainability literacy
- Ecological citizenship
- Place-based knowledge



Maps – recent conditions

Maps – average conditions

Climate change

☐ Trend maps

☐ Timeseries

☐ Extremes trend maps

☐ Extremes timeseries

☐ Site networks

☐ Global trend maps

☐ Global timeseries

Extremes of climate

About Australian climate

Service notice

Network problems on 8 January disrupted processing of observations, affecting some climate information. Missing data are being retrieved and will be processed into our systems over coming weeks.

Variable Mean Temperature

Region Australia

Season Annual

Years of running average T

(T=linear trend; A=average)

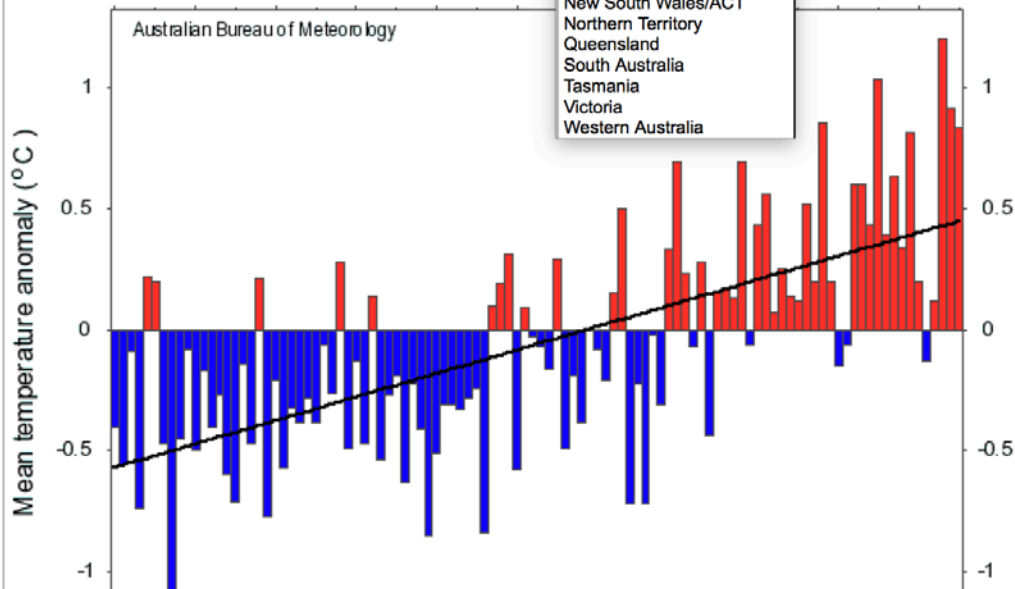
Trend map | Average map

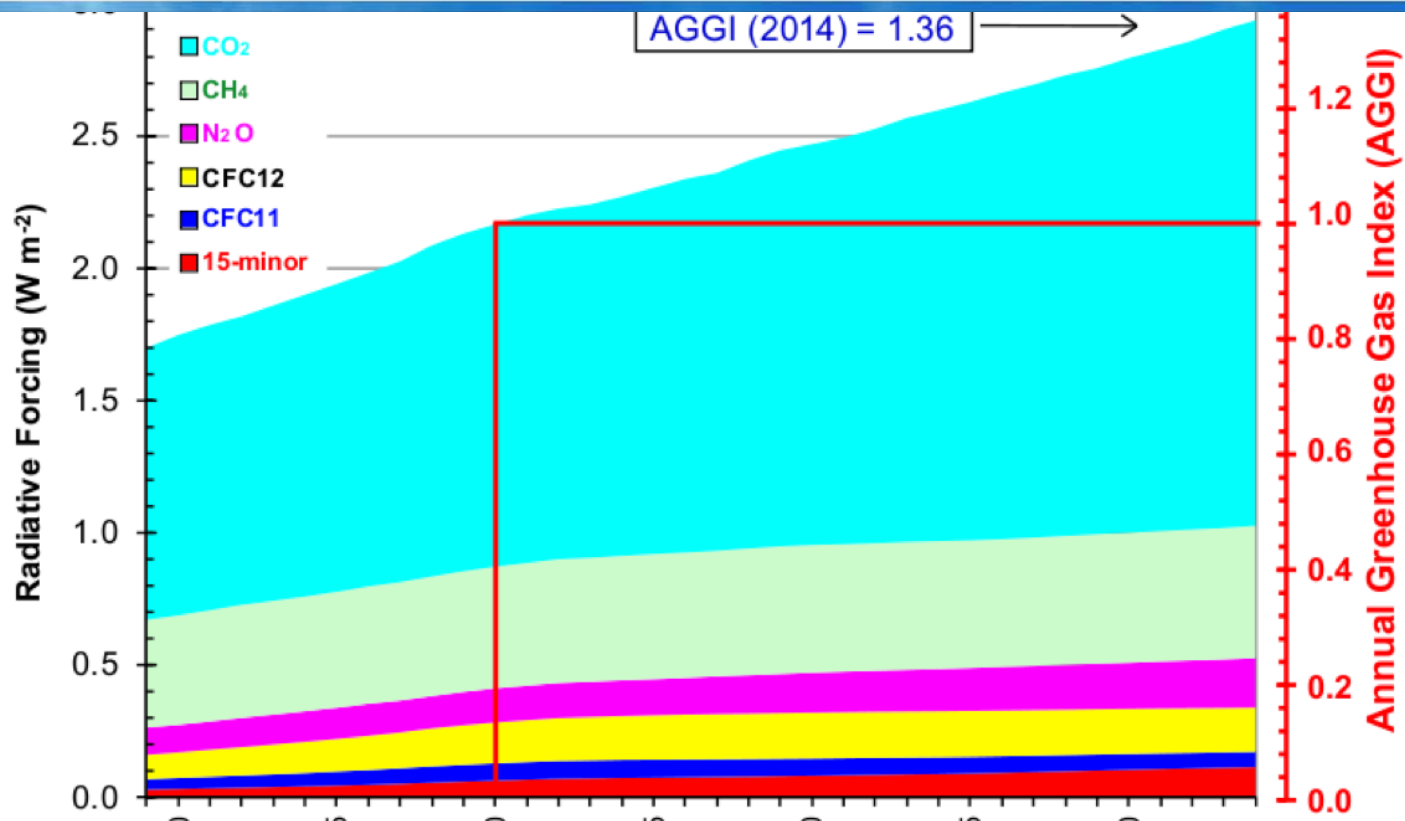
Download

- Australia
- Eastern Australia
- Northern Australia
- Southern Australia
- Southeastern Australia
- Southwestern Australia
- Murray Darling Basin
- New South Wales/ACT
- Northern Territory
- Queensland
- South Australia
- Tasmania
- Victoria
- Western Australia

Average (1961-90) 21.8 °C

Annual mean temperature anomaly (°C) (1961-2015)







The email

Dear Mr. Buckland,

“My son...worried...climate change alarmism...”

“I’m a geologist...done my own research...”

“I’d like to come to your class to do a presentation to discuss the other side...”

Yours truly,

Kiski Dad



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Climate change doubters and deniers

The Doubtful (13%) are uncertain whether global warming is occurring or not, but believe that if it is happening, it is attributable to natural causes, not human activities. They tend to be politically conservative and to hold traditional religious views.

The Disengaged (9%) have given the issue of global warming little to no thought. They have no strongly held beliefs about global warming, know little about it, and do not view it as having any personal relevance. They tend to have the lowest education and income levels of the six groups.

Dismissive (8%), who are very certain that global warming is not occurring. Many regard the issue as a hoax and are strongly opposed to action to reduce the threat. About one in nine have contacted an elected representative to argue against action on global warming.

Yale Project on Climate Change Communication, Global Warming's Six Americas, September 2012

Motivated reasoning

Motivated Reasoning:

“The unconscious tendency of individuals to process information in a manner that suits some end or goal extrinsic to the formation of accurate beliefs. ”

“They Saw a Game” example

~Dan Kahan, Cultural Cognition
Project of the Yale Law School



Motivated Reasoning



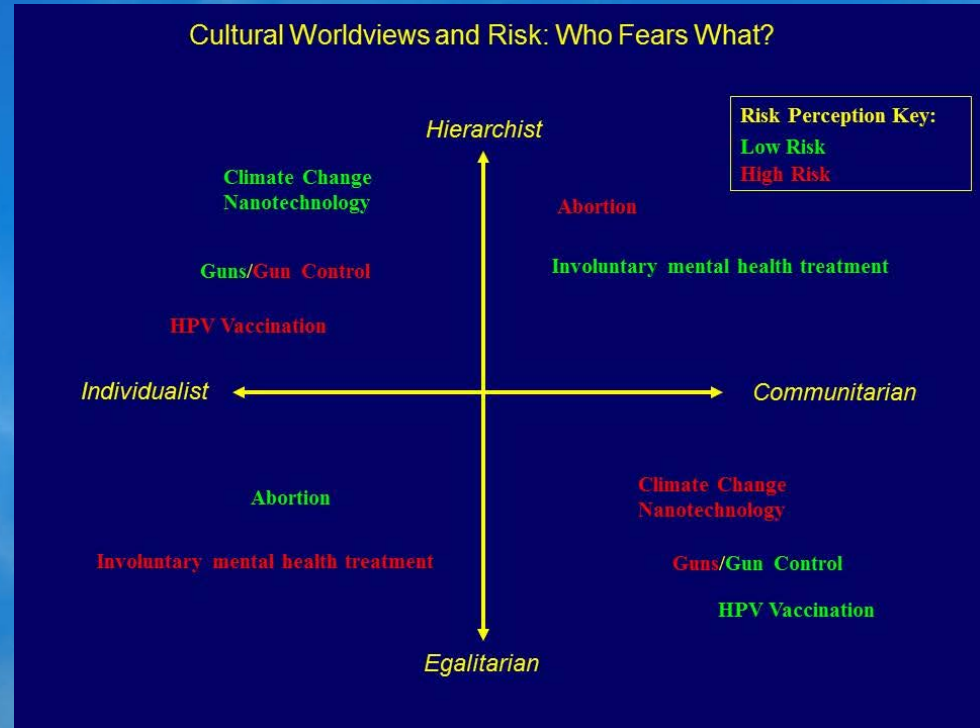
“The reasoning process is more like a lawyer defending a client than a judge or scientist seeking the truth.”

J. Haidt (2001). The Emotional Dog and Its Rational Tail: A Social Intuitionist Approach to Moral Judgment. *Psychological Review* 108 (4). Pp. 814-834.

Motivated Reasoning

- Identity-protective cognition (biased searches and biased assimilation)
- Naïve realism
- Objectivity
- Cultural cognition and conformity of beliefs

Kahan, D. (2011). Neutral Principles, Motivated Cognition and Some Problems for Constitutional Law. *Harvard Law Review* 126. Pp. 1-77.





Necessity: Avoiding a worldview backfire

“Open-minded public engagement with scientific information requires a deliberation environment in which no group of citizens is forced to see assent to sound evidence as hostile to its defining commitments. In cultivating such an environment for deliberations over the problem of climate change, the diverse cultural resonances associated with the full range of potential responses is a resource to be exploited in science communication.” [Emphasis mine.]

Kahan et al, “Geoengineering and Climate Change Polarization: Testing a Two-channel Model of Science Communication,” January 9, 2012, Annals of American Academy of Political & Social Sci.



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Strategy: “Climate change is not a crisis.”

intelligence²
DEBATES

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Rules

“Before the debate begins, the audience registers their pre-debate opinion using an electronic voting system. These results are announced later in the program. Alternating between panels, each debater gives a 7-minute opening statement. After this segment concludes, the moderator opens the floor for questions from the audience and inter-panel challenges. This adversarial context is electric, adding drama and excitement. The debaters have one final opportunity to sway audience opinion through their 2-minute closing arguments. The audience delivers the final verdict by voting again whether they are for, against, or undecided on the proposition. The two sets of results are compared and the winner is determined by which team has swayed more audience members between the two votes.”



What did I do? “Climate change is NOT a crisis.”

Framed the assignment as a friendly competition in the battle of ideas about the risks of anthropogenic climate change.

- Deliberately not “Climate change is real: yes or no.”
- Avoided an alarmist’s position—”NOT a crisis.”
- Equal numbers of students would have to be on one side or the other.
- I never instructed my students to be “objective,” “unbiased,” “rational,” or “open-minded.”



What did I do?

- Divide class into groups of three that were for or against the proposition.
- Provided them with instructions about the debate format and the short paper requirements.
- Pointed them to *kinds* of sources they could and could not use including specific examples.
- Instructed them to develop a thesis and strategy.
- Spent a week guiding them through the process of writing a debate position including finding their own weaknesses and the potential weaknesses of their opponents.
- Appoint a champion.
- Debate!



How did it go?

- Global poverty? AIDS pandemic? The invasion of Crimea.
- MunichRe and SwissRe
- The advance of renewable energy technology—particularly solar power—will prevent doom.
- Severe disruption of the carbon cycle
- And...the students who didn't follow directions.



How did it go?

And the son of the emailing father?

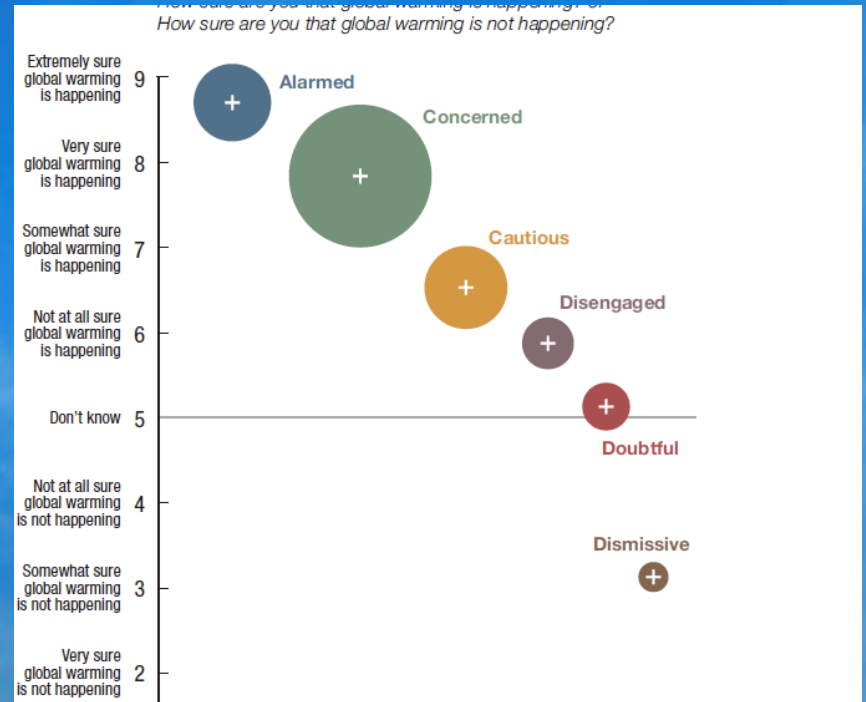
Matt: *Do you think it's a crisis?*

Nate: *No. But that's not the point. I'm arguing a position and doing it the best I can. But there are facts and we shouldn't be afraid of facts. I don't have to think this is a crisis to believe it's real.*

How did I follow up?

Taking the Yale Six Americas survey with a follow-up discussion.

A class for discussion about our attitudes toward whether we believe climate change is a crisis and why or why not?





What next?

Can a format like this one inform the adult discourse on the matter?
How?

What is the appropriate role of political and moral debate in a class?

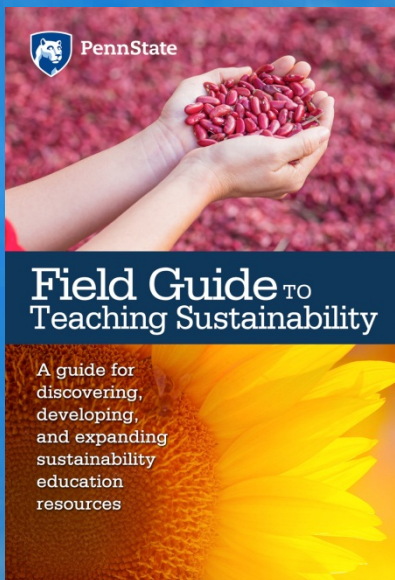
Given recent understanding, should science teachers follow the lead of an increasing number of climate scientists and speak up about climate risk?

These are ethical matters.

Peter Buckland, pdb118@psu.edu

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