Climate Literacy Education: Barriers, Successes, and Future Work

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Honoring the Stewards of the Land

We acknowledge that we are on traditional lands of the O’odham, Hohokam, and Yavapai people.

We honor their stewardship of the land, past, present and future. We engage our students in climate science/NGSS so we can learn to make good decisions that heal our planet and protect our environment.

#HonorNativeLand: https://usdac.us/nativeland
Look up native lands: https://native-land.ca

Petroglyphs created by the prehistoric Hohokam people, who lived from about 200 to 1400 CE, Saguaro National Park, Arizona. ©Dndavis/dreamstime.com; Retrieved from https://www.britannica.com
Why teach climate change?

• Create an informed public
• “End climate silence”
• Kids inform parents

Lawson, et al. (2019). Parent Climate Change Concern in the treatment group (changes seen here were not seen in the control group)
Teachers spend <5 hours per class on climate change (Plutzer et al., 2016)

(Even less for teachers outside of Earth Science classes)
Fewer than half of teachers include climate change (Kamenetz, 2019)

Taking Responsibility for Teaching Climate Change

| % of parents who talk to their kids about climate change | 45% |
| % of teachers who teach about climate change | 42% |

Kamenetz (2019). Percentages of parents and teachers surveyed who talk to kids/teach about climate change
Teachers want to teach about climate change

Kamenetz (2019). The levels at which the public thinks climate change should be taught in schools by various groups of people (teachers, parents, political affiliation).
Kamenetz (2019). The reasons teachers gave for not teaching about climate change.

Reasons Teachers Don’t Teach Climate Change

- It’s not related to the subject(s) I teach: 65%
- Students are too young: 20%
- I don’t know enough about it: 17%
- I don’t have the materials needed to teach the subject: 17%
- I don’t believe in climate change: 8%
- State mandates it be taught at a different grade level: 6%
- My school does not allow it: 4%
- Students have already learned about it in school: 2%

*Teachers have misconceptions (McCaffrey & Buhr, 2007)

Kamenetz (2019). The reasons teachers gave for not teaching about climate change.

Resistance from parents less of an issue but still can cause fear (Wise, 2010)
Climate Literacy Frameworks & Standards

Earth system science introduced to standards including weather, climate, changes - AAAS

Framework developed for big ideas in climate science - NOAA

NGSS – Included climate change in national standards

1996  ...  2009  2011  2013

Framework developed for big ideas in energy - DOE
Climate Education Programs - National

States that have adopted NGSS: 19
States with standards based on NGSS: 21
States with no NGSS: 10
Climate Literacy and Energy Awareness Network (CLEAN)

• CLEAN Collection
  • Curated collection of 700+ resources (videos, visualizations, class activities) for grades 6-16.

• Teaching Guidance
  • Pedagogical support & background knowledge for climate & energy topics (newsletters, PD, NGSS)

• CLEAN Network
  • Community of practice of climate & energy literacy stakeholders (teleconferences, email list, partners)

http://cleanet.org
https://climate.gov/teaching
CLEAN Collection

- 700+ online, free resources
- Activities, videos, visualizations
- Classroom ready
- Community & Expert scientist reviewed
- Aligned with NGSS, Literacy Frameworks
- Grades 6-16
- Curated collection – resources developed by others

*For more information about the review process: [https://cleanet.org/clean/about/review.html](https://cleanet.org/clean/about/review.html)*
Climate Education Programs - Policy

**Top Down** - Washington state climate education legislation funded efforts

*A state-led network for climate science learning that helps teachers and their students understand climate science issues affecting Washington communities*

**Grassroots** - Idaho standards and people are leading efforts

*A recently formed university professor driven network for climate science learning that encourages and helps teachers implement climate change in their classrooms*
Climate Education Programs - Formal Education

*Educating high school students about climate change and empowering them to lead on climate solutions
Climate Education Programs - Informal Science Education (ISE)

*A network of individuals and organizations in informal education that provides training in evidenced-based communications methods.
Conclusions

• Climate Change is an important education challenge
• Still see a lack of climate change education
• Educators need support
• There are many programs working on this challenge in various settings
  • Formal education
  • Informal education
  • Policy
  • Community/frontline work
• There are many opportunities to get involved with this work for educators, scientists, and others – join the conversation to stay informed
Questions? Thank you!

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CLEAN Website: cleanet.org
References


• Kamenetz, A. (2019, April 22). Most Teachers Don't Teach Climate Change; 4 In 5 Parents Wish They Did. *NPR*. Retrieved from [www.npr.org](http://www.npr.org)