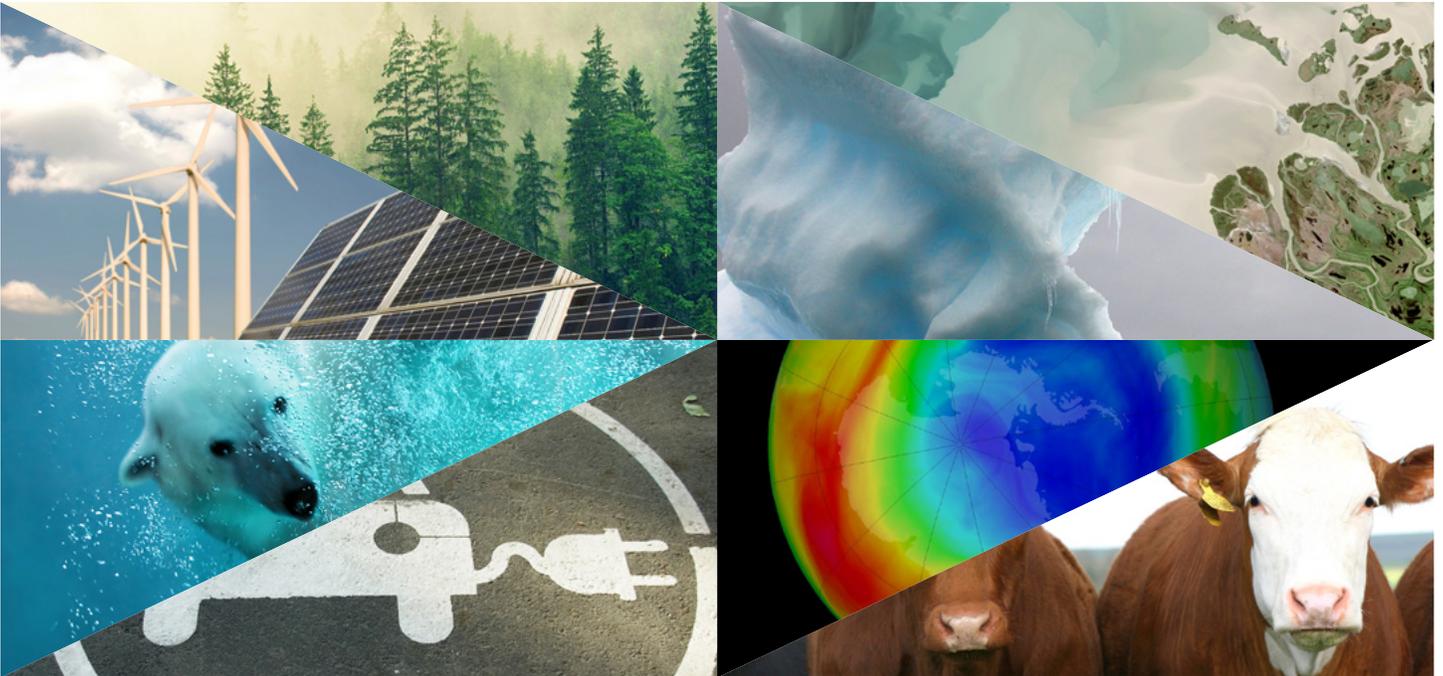


EXECUTIVE SUMMARY

# University of Florida Research Reveals How to Make Climate Change Education Impactful



## Well-designed climate change education can have a tremendous impact.

It is essential to helping people of all ages understand climate change and take informed action in communities around the world. But what does well-informed climate change education look like?

To understand the most effective strategies for climate change education, experts at the University of Florida (UF) conducted a systematic review of empirical research to explore the impact of climate change education efforts.<sup>1</sup>

**BOTTOM LINE**

UF's analysis of peer-reviewed research revealed that climate change education programs **achieve a variety of positive outcomes.** Most commonly, programs **increase climate knowledge**, but they also can impact learners' level of **concern** about climate change, their **problem-solving skills**, and **behaviors.**<sup>1</sup> Effective climate change education programs are personally **relevant and meaningful**, use **engaging teaching strategies**, encourage **deliberative discussion** to explore and navigate disagreements and controversial issues, engage participants in the **scientific process**, **address misconceptions**, and/or incorporate **school or community projects** for participants to take action.

## SNAPSHOT OF FINDINGS

### **Effective climate change education is good science education.**

#### **It is personally relevant and meaningful.**

Climate change is complicated. To make it easier to understand and more personally relevant, educators can use programs that explore local environmental impacts of climate change, such as sea-level rise, a shift in weather patterns, the spread of invasive species, and changes in water quality or quantity. Students can also learn about changes in natural cycles—from when plants bloom to when animals migrate.

#### **It engages learners.**

Experiential learning actively involves students as they learn about climate science, impacts, and solutions. For example, participants can examine their own lifestyle choices to calculate their emissions of rampant carbon dioxide. This differs from regular carbon dioxide emissions, in that it is produced by burning fossil fuels like coal and natural gas for energy.<sup>2</sup> Inquiry-based science lessons can help participants better understand climate science and systems interactions. In addition, small group discussions and interactive assignments can be helpful, as learners reflect on their experiences and ideas.

#### **It enables learners to experience the scientific process.**

Climate science is most engaging when participants actively collect and analyze data, use computer models, and interact with scientists. Some programs stressed the process of interpreting data so that participants can reach their own conclusions about climate change and gain critical thinking skills.

### **Effective climate change education is good environmental education.**

#### **It uses personal, school, and community projects to build skills.**

Some students changed their personal habits, while others planted trees or created videos for social media to increase others' climate awareness. These personal, community, and classroom projects can help support problem-solving skills, build self-efficacy, and boost civic engagement.

### **Effective climate change education helps participants learn in the face of controversy.**

#### **It uses deliberative discussion.**

The students had a variety of recommendations about how to address the climate crisis. When participants were engaged in articulating and defending their ideas, and explaining how they arrived at their conclusions, they showed an improved understanding about climate science and solutions. These strategies were also helpful in understanding why perceptions of climate change vary.

#### **It addresses misconceptions.**

The variety of commonly held misconceptions about climate change presents challenges to educators. Educators must recognize common and often subconscious thinking in learners and in themselves, and work to overcome them with analogies, experiments, or well-placed questions.

## IN SUMMARY

UF's research review suggests that climate change is best taught with effective, well-tested education methods of experiential activities around relevant and meaningful impacts of climate change. In addition, effective climate change education can help build problem-solving skills by engaging learners in classroom and community projects to increase awareness. Finally, students learn more if they are prompted to assess their own ideas, talk through the evidence, and explain their thinking. Understanding and applying some or all of these strategies for climate change education can help educators improve their practice and deepen their participants' learning.

<sup>1</sup> Monroe, M., Plate, R., Oxarart, A., Bowers, A., and Chaves, W. (2017). Identifying effective climate change education strategies: A systematic review of the research. *Environmental Education Research*, <https://doi.org/10.1080/13504622.2017.1360842>. Articles included in the systematic search were limited to those written in English to facilitate analysis.

<sup>2</sup> "Getting to the Heart of the Matter - FrameWorks Institute." [https://www.frameworksinstitute.org/wp-content/uploads/2020/03/occ\\_metaphor\\_report.pdf](https://www.frameworksinstitute.org/wp-content/uploads/2020/03/occ_metaphor_report.pdf). Accessed 12 Aug. 2020.