

# Climate Change and Environmental Education: Framing Perspectives

Marianne Krasny, John Carey, Bryce DuBois, Caroline Lewis, John Fraser, Kari Fulton, Billy Spitzer, Mary Leou, Judy Braus, Anne Umali Ferguson, Jose Marcos-Iga, and Akiima Price

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Report

Civic Ecology Lab



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## Abstract

Environmental education (EE) is in a powerful position to address climate change because of its history of incorporating science with policy education, and proven ability to evolve in response to social and environmental change. The purpose of the paper is to stimulate discussion about the implications of climate change for EE practice, and to suggest ways that EE practices might effectively address climate change. The viewpoints expressed here were synthesized from the remarks of a panel of six climate change experts from diverse fields presented at a workshop held June 3 2014, at New York University in New York City. We also incorporate perspectives shared by the 95 environmental education professionals who participated in the workshop and those of climate action leaders.

Four themes emerged during the workshop: advocacy and civic engagement, environmental justice, climate change as the new normal, and collective vs individual action. In this report, we describe these four themes, followed by brief climate change and EE position statements contributed by the six panel members.

## Introduction and overview

How are educators addressing climate change in the classroom and informal settings? In science classes, teachers focus on the scientific facts about rising greenhouse gas concentrations, historical warming trends, and related flooding, droughts, and sea level rise. Yet research shows that knowledge about climate change does not necessarily lead to support of climate change policies or climate friendly behaviors<sup>(2, 7)</sup>. Environmental educators also focus on the science of climate change, but have a broader mission including changing environmental behaviors and teaching skills needed to engage in the policy process. Because of the broad scope of its practices, and its demonstrated ability to evolve as societal and environmental conditions change<sup>(5)</sup>, EE is well positioned to play a role, alongside management and policies initiatives, in addressing climate change. Below we propose four themes that EE programs might consider in informing their climate change programs.

1. ***Advocacy and civic engagement.*** Embedded in EE's definition are notions of changing environmental behaviors. Yet EE has generally shied away from advocacy and espoused the view that individuals should be left to make their own decisions once they are taught the facts. Given the immediacy, magnitude, and widespread impacts of climate change, should we revisit EE programs that have engaged students in the policy process? And should we also examine the lessons learned from other educational, communication, and civic engagement campaigns that have played a role in major social and policy changes (e.g., the civil rights movement)?
2. ***Environmental justice.*** Climate change and related sea level rise, heat waves, droughts, and flooding have a disproportionate impact on poor communities and communities of color. These communities are forming coalitions to address climate change issues (e.g., [Environmental Justice Climate Change Initiative](#)). EE should join forces with environmental justice groups as part of the larger climate change rights movement.
3. ***Climate change as the new normal.*** The fact that the Earth's climate has changed and it is no longer possible to conserve much of our natural heritage has important implications for EE. Adaptation education that is consistent with environmental quality values needs to be considered, and EE can learn from examples of people adapting to change in ways that protect and even enhance communities and ecosystems. Educators should also consider their role in helping people cope with the powerful emotions generated by climate change, including feelings of vulnerability (leading to denial) and feelings of loss (leading to sadness).
4. ***Collective vs individual action.*** EE has a tradition of focusing on changing individual behaviors to address collective action problems (i.e., problems where a group of people or countries collectively have a stake). In this case, the collective action problem relates to managing a common pool resource, i.e., our climate. Given the wealth of research on conditions that foster collective action to sustainably manage common pool resources<sup>(3, 11)</sup>, EE should consider incorporating this body of work into our pedagogical strategies and our lessons. Further, EE should consider the types of individual behavior change that will most likely lead to collective action.

## **Theme 1. Advocacy and civic engagement**

A recent article in the New York Times raises the question of whether climate scientists, by avoiding making claims not backed up by research conducted according to rigorous scientific standards, have been withholding information on which our future as a species and Planet depends.<sup>(10)</sup> Might environmental educators be guilty of something similar—avoiding teaching about climate change for fear of repercussions or simply stirring the pot? Or even by espousing a facts-only approach?

Much of what is taught in EE is based in environmental science, including climate change science. While science information is critical, research has demonstrated that more information or even knowledge about climate change does not necessarily lead to support of action to address climate change, and in fact can lead to less desirable behaviors.<sup>(1, 2, 7)</sup> Thus, a focus on conveying science-based information alone is not consistent with research about effective practices to meet EE's goal of fostering pro-environmental behaviors. One possible means to address this issue is to teach skills of engagement in the political process, including advocacy.

Advocacy is closely tied to civic engagement. In EE, a civic engagement approach entails viewing members of the public as citizens who can play a role in shaping public policies. It suggests that we need to educate and support people in participating in climate change solutions through voting, contacting elected officials, organizing, protesting, and similar activities. Drawing on EE's strong tradition in civic engagement, we might support program participants in advocating for more bike lanes in city planning, or in joining a climate change protest.

The civic engagement paradigm in EE can be used simultaneously with the consumer education paradigm, in which we educate people so they can make environmentally informed choices about the products and services they buy. The notion of tipping point suggests that once a certain number of people engage in a visible action (like installing solar panels), the rate of adoption increases rapidly. Thus, EE should consider focusing on those behaviors for which there are few barriers, that are visible, and that are likely to lead to positive feedback loops reinforcing the behaviors and leading to more individuals adopting the behaviors. For example, according to Keya Chatterjee of the US Climate Action Network, recent changes in tax and energy law make installing solar panels inexpensive (and saves money within a reasonable time frame), thus reducing barriers; installing solar panels is a highly visible action; as more people install panels, the price of conventional energy rises, leading to a positive feedback loop of more solar installation. Ms Chatterjee predicts that we are near a tipping point in the US with solar panel installation. Further, energy use is one of the three biggest contributors to climate change (along with transportation and food production). This suggests that EE may want to focus on, and where appropriate advocate for, highly impactful and highly visible behaviors.

The advocacy and civic engagement theme is closely tied to the collective action theme. However, collective action suggests that we teach about factors that facilitate collective action, whereas the advocacy and civic engagement theme proposes that we train EE participants in specific skills that enable them to engage in advocacy and other forms of civic action.

## **Theme 2. Environmental justice**

Because poor communities often have deficient infrastructure and are disproportionately located in hotter climates, they may suffer disproportionately from the effects of climate change. Proponents of environmental justice are forming coalitions to address climate change (e.g., the [Environmental Justice Climate Change Initiative](#)). Joining forces with climate justice groups may benefit both EE and the climate justice movement.

Environmental justice focuses on the rights of communities and individuals who are less powerful economically and politically. As a social movement, it strives for the equitable distribution of environmental benefits and burdens. Its tactics draw in part from the civil rights movement, notably because many communities subject to environmental injustice (e.g., the placement of toxic facilities near where they live) are in the poorer states of the southern US, and thus suffered the most extreme racial injustices.

Low-income communities and communities of color have experience dealing with multiple stresses, including poverty, crime, flooding, pollution, and limited open space. This experience, and in particular the means that environmental justice communities have generated to address these stresses, may provide insights in planning for new stresses related to climate change<sup>(9)</sup>. For example, civic ecology practices in low income communities such as community gardening or block beautification projects simultaneously address degraded vacant space, sustainable food production, and declining sense of community, which may be similar to stresses created by climate change.

### **Theme 3. Climate change as the new normal**

EE has focused largely on behaviors that limit our negative environmental impacts, consistent with what we now refer to as mitigating climate change. It is critical to maintain our focus on mitigation and environmental values. But given that climate change effects are already being seen in the form of flooding, drought, temperature increases, and resulting impacts on agriculture, disease, and livability of vulnerable communities, EE also needs to grapple with its role in climate change adaptation.

EE has a history of evolving its practices in response to societal and environmental changes. After the Dust Bowl, EE incorporated conservation education and a focus on soil conservation, and in response to widespread pollution in the 1960s, EE adopted a problem solving approach. However, adapting to the reality of climate change has larger implications, in that some actions that help us adapt to climate change conflict with long-standing conservation values. For example, climate change adaptation education might entail planting non-native species that are more likely to grow in a warmer and drier climate, in a city park or artificial wetland. This creates a tension, that while perhaps not unprecedented in the history of EE, requires serious thought and integration into the definition and scope of our field.

The 2014 IPCC report outlines different types of climate adaptation under the broad categories of structural/physical, social, and institutional.<sup>(6)</sup> Within each category, a subset of approaches is consistent with environmental values. For example, under physical/structural, ecosystem-based adaptations like installing artificial oyster reefs and restoring dunes to protect shorelines are more consistent with EE values compared to building concrete seawalls.<sup>(8)</sup>

Accepting the reality of climate change also entails facing the profound sense of loss and hopelessness that it engenders in some people, including potentially our most vulnerable children and teens, as well as EE professionals who face environmental decline and possibly associated feelings of loss on a daily basis<sup>(4)</sup>. Hopelessness can become a vicious circle, leading to inaction, and further hopelessness or even despair. Further, although some claim that the battle to mitigate climate change so that the Planet retains any semblance of life as we know it has been lost, many feel that there is still a possibility to avert some of the worst impacts if we act quickly, strategically, and forcefully. For these reasons, it is important that EE take care in how climate change education is presented to vulnerable audiences, and that we are aware of the potential to engender feelings of loss and sadness. Further, we should plan educational strategies to avert this possibility by suggesting meaningfully ways to engage in mitigation and adaptation, and by incorporating the skills needed for such engagement into our EE programs. We must also pay attention to the emotional support needs of EE professionals.

#### **Theme 4. Collective vs individual action**

Climate change, similar to other environmental and conservation issues, presents a collective action or “tragedy of the commons” problem. I am better off if I drive my car or take a hot shower, but collectively if we all drive cars and take hot showers and thus use energy and water, the environment suffers. Fortunately, scholars like Nobel Laureate Elinor Ostrom and popular writers like Malcolm Gladwell have given us multiple tools to understand collective action problems. For example, we know that collective action to sustainably manage a common pool resource (such as a forest) is more likely to occur when certain conditions are present including:

- (i) the resources and use of the resources by humans can be monitored, and the information can be verified and understood at relatively low cost;
- (ii) rates of change in resources, resource-user populations, technology, and economic and social conditions are moderate;
- (iii) communities maintain frequent face-to-face communication and dense social networks—sometimes called social capital—that increase the potential for trust and lower the cost of monitoring behavior and inducing compliance with rules or laws;
- (iv) outsiders can be excluded at relatively low cost from using the resource (new entrants add to the harvesting pressure and typically lack understanding of the rules);
- (v) users support effective monitoring and rule enforcement.<sup>(3)</sup>

EE could use these and similar principles generated by Ostrom and her colleagues to help program participants analyze situations in which collective action is more or less likely to be successful. Some of these conditions may not be present in large scale collective action problems like climate change. However, these principles may be applied to smaller-scale collective action, such as ecosystem-based shoreline restoration in any one community. Further, understanding when conditions conducive to collective action are not present should enable us to know where we should be exploring alternative approaches to managing our climate resource, such as communication campaigns and government regulation.

## **Appendix I. Climate change statements of Perspectives Workshop panel members.**

*John Carey, [Freelance Journalist](#).* I see two major challenges for environmental education. One is increasing people's understanding of the basic physics underlying climate change. The public needs to know that higher levels of carbon dioxide inevitably warm the Earth, not just because scientists say so, but because of the inviolable laws of physics. People also need to know that research into geologic history shows conclusively that past increases in carbon dioxide are associated with dramatic swings in climate and sea levels—just as the physics predicts. Such incontrovertible facts may be more persuasive than arguments based on climate models or temperature records, which will always have uncertainties.

The second challenge may be even tougher—convincing people that climate change is a matter of science, not politics. We need to combat the widespread perception that climate change is a liberal plot to raise taxes, increase the size of government and take away people's freedoms. That requires educating people not just about the science, but also about the economic costs (to the nation and to them personally) of not acting to fight climate change, and about the many benefits that would come from working to create a cleaner, more sustainable energy future.

*John Fraser, President, [New Knowledge Organization](#).* EE should adapt its practices to engage in deliberation about how to respond to the inevitable acceleration of biological change that will be the consequence of climate change. Irrespective of policy and technological change, the anthropocene has sown the seeds for the next Gondwana with international migration of biological actors whose unforeseen interactions will define the next trophic change. Fraser suggests that it is necessary to leave behind narratives of stewardship, and refocus EE efforts toward husbandry of the next generation of biodiversity; focusing on natural processes that embrace productivity and the value of a fecund regenerative process that will support a nature that looks nothing like what exists today.

*Kari Fulton, Project Director [Environmental Justice Climate Change Initiative](#).* Environmental Education and Climate Change must take into account the changing demographics of communities, environmental justice, national security and emergency preparation. As a country we have quietly slipped out of the mitigation phase of addressing Climate Change and are now facing a head on collision with adaptation. Environmental Education must include an understanding of strategies for surviving a natural disaster and building resiliency. These measures can include urban farming, water conservation and identifying the uses of native plants and herbs.

I would also encourage Environmental Education to leap out of the "wonky" world of Science, Technology, Engineering and Math (STEM) courses and merge into broader fields of study and public engagement. Broadening the outreach of EE also includes taking into consideration the variety in our cultural dynamics and demographics. Communities of Color and/or low-income communities are disproportionately impacted by climate change and the situation is magnified when you consider displacement due to gentrification, immigration and previous natural disasters. Environmental Education can also infuse various techniques of different cultures and traditional knowledge to increase engagement with communities that are at the frontlines of climate change.

*Caroline Lewis, Founder and Executive Director, The [CLEO Institute](#) (Climate Leadership Engagement Opportunities).* EE efforts and targets need immediate re-thinking in light of the significant human-caused climate disruptions that are here and coming. EE must confront the seriousness of climate change in order to purposefully unleash the economic and political engines that spur bold, creative, scalable, job producing solutions. The EE field must also target collective impact outcomes, as climate disruptions trigger food, water and health insecurity; species and ecosystem vulnerability; economic challenges; environmental justice issues; and the escalating need

to act in the public's interest. EE must target additional audiences, including investors and policy-makers, and bolder content that much more deliberately addresses climate and energy literacy.

*Billy Spitzer*, Vice President, Programs, Exhibits & Planning, [New England Aquarium](#). We need to shift the climate change conversation from “doom and gloom” to “hope, innovation, and change.” We need to go beyond describing the impacts, to help people understand how our systems for energy and transportation need to change. EE used to focus on the small things we can do to make a difference. Given the scope of the problems we face, we need to do big things and make a big difference. We need to act as a community, realizing our potential as citizens, not just consumers.

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