Climate Change Education Position Statement Working Group

Charge: Develop a Climate Change Education position statement that will be relevant to a wide spectrum of climate literacy professional societies and organizations, with the goal of getting these societies and organizations to sign onto.

An earlier draft is here.

The one page letter is the next page. Supporting text (the prior draft) follows that on page 3. Thanks to Jane Heinz-Frey for chopping down the text to a single page.

The link for this page is:
https://docs.google.com/document/d/1dFSYTi6CCm4FYBOxvcJrVe0f0gQCNAEFEaAzqDJR5nc/edit?usp=sharing

The (DRAFT) Joint Statement on Climate Change Education (6/30/16)

Education will be a key tool to address the challenges of climate change during this century. It is our understanding that:

- Climate change is a real and serious problem of global proportions.
- Changes in climate currently underway are primarily human-caused.
- Humans can take actions to reduce climate change and its impacts.
- Climate change education does not occur in one domain, but rather across an interdisciplinary/multidisciplinary curriculum.

Science and Civics are foundational to climate change education. Language arts and the fine arts, history, mathematics, and the social sciences contribute salient perspectives. The Next Generation Science Standards (NGSS) developed based on the 2012 National Research Council's framework is a transformative set of guidelines for teaching science in the United States. For the first time, climate change is recommended as a core concept for U.S. science curricula, including an emphasis on anthropogenic or "human-caused" effects. Climate change science is firmly rooted in peer-reviewed scientific literature; it is as sound as other science and engineering subjects such as earthquakes and the solar system.

A firm grasp of civics is necessary for citizens to develop a broad range of approaches and solutions to climate change. Climate change education will assist learners in developing skills for understanding and addressing climate change. Learners will develop decision-making and citizenship skills including, but not limited to, forming and evaluating personal views, evaluating the need for citizen action, planning and taking action, and evaluating the results of actions. Learners will develop a sense of personal efficacy and civic responsibility through understanding societal values and principles and recognizing citizens' rights and responsibilities. (adapted from Excellence in Environmental Education: Guidelines for Learning (K-12))

While science and civics provide foundational knowledge about climate change and skills to address solutions to climate change, there are crucial perspectives and roles to be offered across the curriculum. Following are some, but by no means all, of those perspectives. Mathematics plays an important role in understanding the scales of time and space across which climate change ranges, probabilities of climate change and interpretation of data resulting from climate science. English, language arts and literacy is crucial for clear verbal and written communications. The fine arts are crucial for creative expressions of attitudes toward climate change and also for creative engineering solutions. Economics is vital to decision making, cost-benefit analyses, and risk management. Sociology gives us insights into how different communities are affected by climate change and appropriate cultural responses they might offer. Psychology gives us perspectives on how people react to learning about climate change and why. The magnitude and urgency of climate change and its impacts challenges us to think, feel, and act in newer, deeper, and more complex ways than before. Our response, then, must be multidisciplinary in nature.

We the undersigned commit to address climate change within our organizations and promote climate change education in our broader society.

Background for the Joint Statement on Climate Change Education

Some comments on this draft are here.

“In the coming decades, scientists expect climate change to have an increasing impact on human and natural systems. In a warmer world, accessibility to food, water, raw materials, and energy are likely to change. Human health, biodiversity, economic stability, and national security are also expected to be affected by climate change. Climate model projections suggest that negative effects of climate change will significantly outweigh positive ones. The nation’s ability to prepare for and adapt to new conditions may be exceeded as the rate of climate change increases.” (Climate Literacy, Informed Climate Decisions Require an Integrated Approach, 2009)

“Reducing our vulnerability to these impacts depends not only upon our ability to understand climate science and the implications of climate change, but also upon our ability to integrate and use that knowledge effectively. Changes in our economy and infrastructure as well as individual attitudes, societal values, and government policies will be required to alter the current trajectory of climate’s impact on human lives. The resolve of individuals, communities, and countries to identify and implement effective management strategies for critical institutional and natural resources will be necessary to ensure the stability of both human and natural systems as temperatures rise.” (Climate Literacy, Informed Climate Decisions Require an Integrated Approach, 2009)

Climate change, energy, and water - these tightly connected issues are almost certainly amongst the greatest challenge global society faces in the coming decades. While these are obviously scientific issues, they are far more than that. Deeply understanding these challenges requires more than knowing the underlying physical and natural sciences, but also the ability to see our changing climate in the context of history, culture, economics and more. Deep understanding requires appreciating the interdisciplinary nature of climate change, and contextualizing climate change within the liberal arts.

This statement is grounded in three key ideas.

- Climate change is a real and serious problem of global proportions.
- Changes in climate currently underway are primarily human-caused.
- Humans can take actions to reduce climate change and its impacts.
- Climate change education does not occur in one domain, but rather across an interdisciplinary/multidisciplinary curriculum.

Carl Sagan helped us to understand that humanity is a blip in time on a speck in space. Because everyone we know and love is encapsulated in this blip of time and on this speck in space, we treasure it deeply and want to preserve its richness, its diversity, and its

life-supporting aspects. *We are profoundly lucky to live right here and right now. We have a duty to preserve our luck for future generations, and right now, we are poised to fail at that task.*

None of this speaks to the absence or presence of forces beyond nature, but it does speak to the awesomeness and wonder of nature. Understanding the nature of the Earth system deepens our senses of wonder and responsibility. This sense of wonder and responsibility begets a responsibility for sharing it.

We educators are lucky to do what we do.

Preparing learners for the duties of citizenship and a future workforce

Providing information on climate change can remove the "fear and the sense of helplessness, and encourage individuals and communities to take action." [add citation - Markey bill]
As educators, we are driven to simplify the seemingly complex. This is often both desirable and appropriate, but the world is a complex place. Sometimes it is necessary to complexify the seemingly simple. Part of what that means is that most matters of import cannot be deeply understood from the perspective of a single discipline. Climate is an ideal **interdisciplinary** theme for lifelong learning about the scientific process and the ways in which humans affect and are affected by the Earth's systems.

Human activity has changed the chemistry of the atmosphere in ways that are altering atmospheric dynamics and changing the climate. While climate has changed markedly throughout the 4.5 billion years of Earth's history, it has been comparatively stable for 10,000 years. This relative stability has allowed agriculture and civilization to rise and flourish.

The stories of the rise of civilization, the alteration of atmospheric chemistry, and changes of climate intertwine. Fossil fuels brought about the Industrial Revolution and ultimately made our modern way of life possible. Chances are good that everything that is currently within your view is there in some meaningful way because of fossil fuels. The continued extensive use of these same fuels now jeopardizes that very way of life.

Communities, Cities and States across the United States are a leading force on climate action. Cities and States are where the future happens first. Cities have demonstrated leadership on climate by networking over "80 of the world's greatest cities, representing 550+ million people and one quarter of the global economy." (C40) These cities are focused on tackling climate change and driving urban action that reduces greenhouse gas emissions and climate risks, while increasing the health, wellbeing and economic opportunities of urban citizens. Education can be central to both the near and long term progress cities and their regions progress for their **generations of citizens to ensure a firm foundation of knowledge and discourse as society faces decisions on how to best deal with a changing climate.**

The new science education standards (NGSS) developed based on the 2012 National Research Council's framework is a transformative set of guidelines for teaching science in the United States. **For the first time, climate change is recommended as a core concept for U.S. science curricula, including an emphasis on anthropogenic or "human-caused" effects.** Climate change science is firmly rooted in peer-reviewed scientific literature; as science, it is as sound as other science and engineering subjects such as earthquakes and the solar system.

Efforts to properly teach about climate change are regularly challenged by those seeking to frame it as somehow different from other scientific subjects, often with claims that it is either "uncertain" or "controversial." They advocate the need for a special approach to its teaching, such as added effort to balance perspectives. **With this statement, the CLEAN Network and supporting organizations seeks to confirm the solid scientific foundation on which climate change science rests, and to emphasize that teaching approaches different from other sciences are not warranted.** Uncertainty is a natural component of all scientific endeavor. The existence of uncertainty does not undermine the scientific validity of climate change science; to the contrary, it provides a sound example for broader instruction of the scientific method.

In just these few paragraphs, the importance of a wide range of disciplines is brought to bear on understanding, preparing for, and responding to climate change: history (both human and natural); the role of mathematics; the place of story, civics and ethics, economics; and the role of science. This is not a full list. We must use the infrastructure we have to make the infrastructure we need, bringing engineering, planning, and, once again, economics, to bear on these challenges. And the psychology, sociology, and anthropology that describes how we think, learn, and behave are profoundly important for informing effective instruction as well as for avoiding ineffective and counter-productive instruction.

The structures of education, likewise, must change to meet these needs. Here too, we must use the structures we have to build the structures we need. While academic disciplines will always play an important role in education, the challenges discussed here require unprecedented connection and collaboration amongst disciplines. This statement is a call for building new structures and approaches within the educational system that facilitate an interdisciplinary approach, and the teaching of climate change in the context of the liberal arts.

The label "liberal arts" might imply to some that this statement is targeting undergraduate education. It is, but the target is far broader than that. Building deep understanding of climate, its importance to our lives and our civilization, and understandings of how climate is changing begins early in life with appreciation of the natural environment and deserves a place across curricula from grade school to graduate school and informal educational settings as well.

We do not prescribe a set method to bring an interdisciplinary approach to climate education, nor do we expect every educator in every setting to bring climate into their curricula. Some may collaborate with others across their schools or campuses while others will work as individuals to

draw connection to climate within their curriculum. We do, however, hope that hope itself is part of instruction, that instruction includes attention to the duties of citizenship, and that it avoids despair and victimhood.

We the undersigned commit to climate change being an integral part of curricula within our discipline and commit to promoting the teaching of climate change.

Link to folder of Existing Climate Change Education Position Statements - you can add documents to this folder but please have the file title reflect the organization and topic of the position statement.