Mixed Messages: How Climate Change is Being Taught in America’s Public Schools*
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The average global temperature of the earth has been increasing over the last 150 years. It is now virtually certain that this increase is caused largely by the increased prevalence of greenhouse gasses in the earth’s atmosphere due to accelerating consumption of fossil fuels. There is widespread agreement among climate scientists that consequences will include increased intensity of storms, increased incidence of extreme weather, gradual shifts in the ability of native plants and animals to thrive in their previous ecosystems, and increased risk of drought in many parts of the world.

While some individuals will have the ability and resources to minimize the impact on their own lives (e.g., by relocating, or by improving their property with sand dunes or flood mitigation systems), addressing the collective impact will require action by institutions - small ones such as neighborhood associations and local governments; and larger ones such as national governments and international organizations. In a democracy, the ability to participate in governance at all levels is a right and a responsibility. Scientific literacy will play an unusually important role as citizens participate in the crafting of policies designed to slow global warming or mitigate its effects.

Although the mass media, informal education (such as museums and zoos), and advocacy organizations play important roles in promoting scientific literacy, a special responsibility lies with our public schools. Schools reach into all sectors of society and create environments that are better insulated from ideology and rancor than social media or political forums. Schools are well positioned to create a foundation of scientific understanding that will allow future citizens to understand the technical core of scientific controversies and to critically assess arguments and solutions proposed in the political sphere. It is in this context that this report seeks to assess how the United States’ public schools are educating the next generation of citizens about the science of climate change:

• How many students are receiving instruction about recent global warming?
• What topics and scientific principles are they being taught?
• Are teachers well equipped to teach effectively today and in the future when enhanced attention to climate change is required by new state content standards?
• And, finally, how much do non-scientific ideas and ideologically motivated reasoning find their way into public school classrooms?

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Surprisingly, we found only a few research projects that sought to answer these questions. Some were based on non-scientific opt-in polls, some sought to be representative but relied on social and institutional networks to recruit respondents, and some were surveys of small geographic areas. But even taken together, these previous efforts did not provide more than tentative and preliminary answers to these questions.

**The National Survey of American Science Teachers**

To remedy this, we conducted the first nationally representative survey of science educators to focus on climate change. The results allow us to paint a national portrait of climate change education in the 2014-2015 academic year. The effort was the result of a partnership between the non-profit National Center for Science Education and the Penn State Survey Research Center.

**Findings and Policy Implications**

Our data show that climate change and recent global warming are being taught widely, but not in a systematic way. Moreover, many teachers are shaky on the underlying science, underestimate the degree to which their views of the causes of climate change are shared by the scientific community. These contribute to teaching that often presents mixed messages to middle- and high school students that undermine the school’s mission to promote scientific literacy.

We conclude with policy recommendations that follow from our data and findings.

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**SPEAKER BIOGRAPHY**

**Eric Plutzer** is Professor of Political Science at The Pennsylvania State University where he also an associate in the Center for Human Evolution and Diversity. He has published widely in the domains of US public opinion, elections, voter turnout and youth civic engagement. Over the last decade he has turned his focus to the study of the politics of science and science education. With Michael Berkman, he is the co-author of *Evolution, Creationism, and the Battle to Control America's Classrooms* (Cambridge 2010) and has published in journals such as *Science, PLoS Biology, the Bulletin of Science Technology and Society.*