Climate change misconceptions common among teachers, study finds

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Recent studies have shown that misconceptions about climate change and the scientific studies that have addressed climate change are pervasive among the U.S. public. Now, a new study by Benjamin Herman, assistant professor in the Department of Learning, Teaching and Curriculum in the University of Missouri College of Education, shows that many secondary school science teachers also possess several of these same misconceptions.

In the study, Herman surveyed 220 secondary science teachers in Florida and Puerto Rico to determine their knowledge about climate change science. The survey asked questions regarding things that do contribute to climate change, such as greenhouse gas emissions, and things that do not significantly contribute, such as the depletion of the ozone layer and the use of pesticides. The survey also asked whether controlled scientific experiments are required to validate climate change.

While the majority of the surveyed teachers accurately responded that fossil fuel use, automobiles and industry emissions were major causes of climate change, they also exhibited notable climate change misconceptions. For instance, nearly all of the Puerto Rico teachers and more than 70 percent of Florida teachers believed incorrectly that ozone layer depletion and pesticide use were at least minor, yet significant, causes of climate change. Additionally, Herman says that nearly 50 percent of Florida teachers and nearly 70 percent of Puerto Rico teachers think that climate change science must be studied through controlled experiments to be valid.

Herman says the teachers in his study exhibited climate change science misconceptions at a similar rate to average Americans. He says these results are understandable given that teachers are often overworked and not afforded professional development opportunities that would deepen their climate change science knowledge.

"Teachers want and need support to keep them abreast of scientific discoveries and developments and how scientists come to their well-established claims regarding climate change," Herman said. "Climate change science involves many different types of science methods stemming from disciplines, including physics, biology, atmospheric science and earth science. Science teachers also need professional development directed at assisting them in their efforts to accurately and effectively engage students on this important issue. Because of existing misconceptions and misinformation regarding climate change, science teachers have a crucial professional and ethical responsibility to accurately convey to their students how climate change is studied and why scientists believe the climate is changing."

The study, "Florida and Puerto Rico Secondary Science Teachers' Knowledge and Teaching of Climate Change Science," was published in the *International Journal of Science and Mathematics Education*.

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