

## Statement on Climate Change

Central to the mission of the **Department of Theory and Practice in Teacher Education (TPTE)** at the University of Tennessee is developing research-based programs that result in strong teachers and strong schools. Consistent with this mission, TPTE relies on research to inform its practices and initiatives. This statement is one in a series designed to inform the public on what research says about critical issues in education.

For more than a decade, the scientific community has maintained a consensus view, based on overwhelming evidence from a variety of sources, of global **climate change**: that climate change is occurring, is a growing threat to society, and is human-induced (National Academy of Sciences, 2005). While the scientific community has widely accepted these propositions, opposition to the science behind climate change still exists within the political domain (Dunlap, 2013). We, as a body of scholars, accept the scientific community's consensus on climate science. Additionally, we recognize the recently adopted Tennessee science standards' inclusion of climate change as a subject of study in K-12 education. Thus, in keeping with our mission to provide research-based programs and our professional obligation to support educators in implementing academic standards, **we intend to prepare current and future science educators to teach ALL of the science standards, including those related to climate change, in public schools.** Through instruction in climate change, we have the opportunity to increase students' scientific literacy and contribute to the development of an informed citizenry.

### Climate Change as an Accepted Entity

All of the 17 internationally-recognized scientific academies have issued numerous public statements endorsing the position, supported by over 97% of actively-publishing climate scientists (Cook et al., 2016), that the global climate is changing rapidly and that this change is largely attributable to emissions from human activities. Additionally, other entities, including the Department of Defense, have incorporated that understanding into their own plans.

- The American Association for the Advancement of Science (2006), the largest scientific society in the world: "The scientific evidence is clear: global climate change caused by human activities is occurring now, and it is a growing threat to society." (p. 1)
- The American Meteorological Society (2012): "Climate is always changing. However, many of the observed changes noted above are beyond what can be explained by the natural variability of the climate. It is clear from extensive scientific evidence that the dominant cause of the rapid change in climate of the past half century is human-induced increases in the amount of atmospheric greenhouse gases, including carbon dioxide (CO<sup>2</sup>), chlorofluorocarbons, methane, and nitrous oxide." (para. 7)
- The U.S. Department of Defense (2015): "Global climate change will have wide-ranging implications for U.S. national security interests over the foreseeable future because it will

aggravate existing problems—such as poverty, social tensions, environmental degradation, ineffectual leadership, and weak political institutions—that threaten domestic stability in a number of countries.” (p. 3)

### **Climate Change in Tennessee Science Standards**

Stemming from this widespread scientific consensus, many states’ K-12 science curriculum frameworks, including those of Tennessee, now include references to climate science (TN DOE, 2016). For example, Tennessee Academic Standard for Science: ECO.ESS3: Earth and Human Activity (2016) includes: “Engage in argument from evidence regarding the impacts of human activity on climate change. Design solutions to address these impacts” (p. 87). *Note that the standards do not require students to state a particular belief regarding human-caused climate change.* Rather, they require students to engage with appropriate data to construct scientific arguments and, in this case, design solutions.

### **Climate Change, Scientific Literacy, and Citizenry**

The Tennessee Science Standards Value Statement (2016) states:

The challenge of developing and sustaining a population of **scientifically informed citizens** requires that educational systems be guided by science curriculum standards that are academically rigorous, relevant to today’s world, and attendant to what makes Tennessee a unique place to live and learn. (p. 1)

The inclusion of climate change in the curriculum furthers these aims and can contribute to the overall scientific literacy of the citizens of Tennessee. The Smithsonian Institute (2011) outlined the importance of scientific literacy:

The future of our youth depends on their fluency in science in a world where employers seek well-educated, well-rounded individuals. Even our own ability to survive as a species depends on understanding the threats to our ecosystems and the choices we can make to mitigate those threats.” (p. 3)

**Tennessee is not immune to these threats. Recently, researchers across Tennessee institutions, including the Oak Ridge National Laboratory and various reported that by the end of the century, average summer temperatures in Tennessee would increase by approximately five degrees Fahrenheit and that increased water temperatures would reduce the yield of nuclear power plants reliant upon cool water (Sustainable Tennessee, 2012). In order to cope with these emerging realities in their daily lives and in the workforce, citizens of Tennessee must be engaged with these issues.**

There has never been a more critical need to bridge the gap between scientists and those who are doubtful of science (Smithsonian Institute, 2011). We, as a department, will do our part to support the findings of the scientific community, to ensure our graduates are equipped to teach academic standards, and, ultimately, to improve scientific literacy for the development of a well-informed citizenry.

## TPTE Position Statement References

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